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NATIONAL BRUCELLOSIS COMMITTEE MEETING



1963
PROCEEDINGS

National Brucellosis Committee

S. H. McNutt, Chairman

University of Wisconsin

Department of Veterinary Science

Madison, Wisconsin

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ATTENDANCE AT THE 1963 ANNUAL MEETING
of the
NATIONAL BRUCELLOSIS COMMITTEE
St. Louis, Missouri
February 20 and 21

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M. Bay Agricultural Research Service Washington 25, D. C.	USDA, ARS
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MARKET CATTLE TESTING IN ARKANSAS

Progress Report

by

David Ibsen, State Veterinarian

and

Paul Becton

Federal Veterinarian in Charge, Animal Disease Eradication, USDA

The State of Arkansas began an extensive Market Cattle Testing Program on July 1, 1961. Prior to this, the State conducted an approved Market Testing Program which called for the compulsory testing of all stocker cows and the voluntary testing of slaughter cows.

On July 1, 1961, the following program went into effect.

I. Requirements:

A. All adult females eligible to test are identified as to herd of origin when they arrive at the market. State law requires dealers to furnish the complete name and address of herd from which each animal was purchased.

B. All adult female cattle are bled and tested prior to sale except official vaccinates under 30 months of age and animals identified as having been tested negative within 15 days.

C. Herds of origin of reactors found at livestock markets are placed under quarantine and tested as soon as possible.

II. Objectives:

A. Immediate Objectives

(1) Locate infection.

(2) Prevent movement of infected animal into clean herds and clean areas.

B. Long Range Objectives

(1) Accumulation of information needed to maintain modified certified areas.

(2) Establishment of certified brucellosis free areas.

(3) Total eradication of brucellosis with the help of brucellosis ring tests and calfhoo vaccination.

III. Method of Operation:

A. Handling

The cattle are handled by the market personnel. As soon after arriving at the market as possible, the cattle are moved by market personnel to the testing area and after the samples are drawn, are returned to the sales pens. In the event reactors are found, these animals will be cut out, moved back to the testing chute, at which point they will be tagged and branded and moved to the reactor pen.

B. Identification

Receiving tickets are completed to show name and location of the herd of origin. This activity is supervised by a State or Federal livestock inspector to insure accuracy and completeness of information. A record will be made of sale number and ear tag number at the time the animals are tested. Negative animals are identified by a back-sticker indicating that the animal is negative with a space to record date of test and ear tag number. Reactors are tagged and branded in the usual manner.

C. Testing

In the majority of markets the samples are collected by an accredited veterinarian at State and Federal expense. The samples are tested by a State or Federal technician in most cases. This procedure will vary to some extent in different markets due to the number of cattle to be tested. In some of the smaller markets the entire operation is conducted by State and/or Federal personnel. All samples are forwarded to the Central Laboratory for confirmation.

IV. Release from Sale:

Cattle moving from the market interstate are accompanied by the usual type of certificates issued by the accredited veterinarian. Negative cattle moving to points within Arkansas move without certificates but are identified by the negative back-sticker indicating date of test and ear tag number. All reactor animals are accompanied by ADE Form 1-27.

V. Reports:

A. Market test charts are completed to include a record of all cattle tested. The chart will show tube number, sale number, tag number, description of animal, test result, and herd of origin for each animal. This chart will accompany samples to the laboratory for confirmation test.

B. Herd Record Cards in the office are posted from the market test charts. Herds of origin of reactors found in the Market Cattle Testing are assigned to a fee basis veterinarian or livestock inspector immediately for testing.

Results:

Chart A indicates the comparison of herds tested on the farm and herds screened at our markets. Well over 17,500 herd tests were conducted on the farms in 1960, as compared to 7,350 on the farm herd tests in 1962. The Market Cattle testing program screened 11,000 herds in 1960 and 52,000 herds in 1962. We feel that our testing program is five times as extensive and thus we are not wasting time testing negative herds on the farm.

Chart "B".

This chart indicates the results that were disclosed during the calendar year 1962. During this year a total of 128,000 animals were tested and identified to 53,000 herds, revealing .7% infection. As indicated on Chart B, 95.2% of all reactors disclosed were traced to the herd of origin.

A break down of these herd tests is shown on Chart B. We call your attention to the fact that the 191 infected herds indicated 569 additional reactors and to the fact that 47% of the herds tested negative.

Chart "C".

This is a county breakdown of all counties recertified by use of our Market cattle testing program. We have not failed to recertify any county under this system. Our projected estimate indicates that all counties in the state will qualify under our testing program, and it is possible to establish several counties as Brucellosis free counties based on information obtained under this program.

We feel that the State of Arkansas could not possibly keep pace with our Brucellosis exposure from some of our neighbors if we did not have this program in effect. We also feel that this is the most efficient and economical manner to conduct a recertification program.

We are indebted to Dr. Paul Becton, Veterinarian in Charge ARS, State of Arkansas, and his staff for all of the statistical material used in this paper.

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CHART "A"

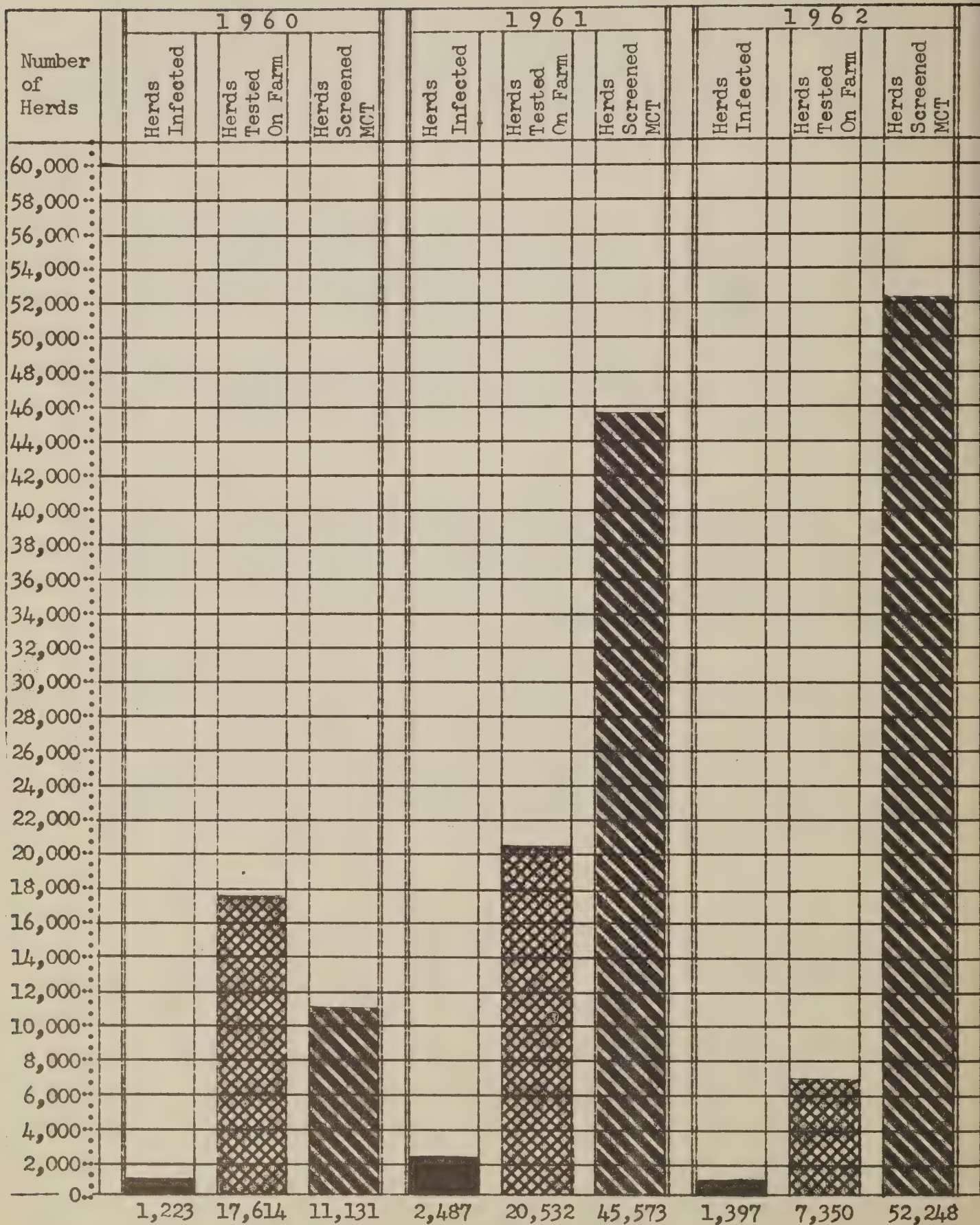
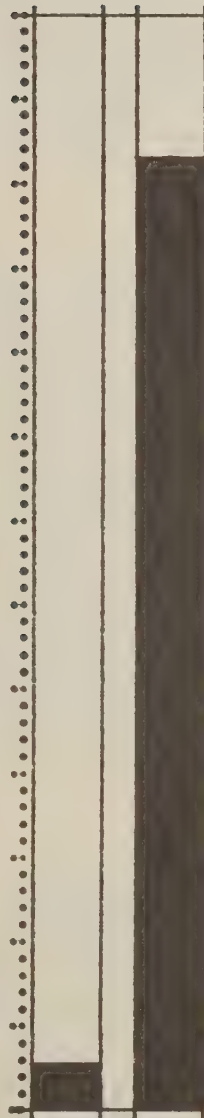


CHART "B"

1186 MARKET REACTORS CLEARED



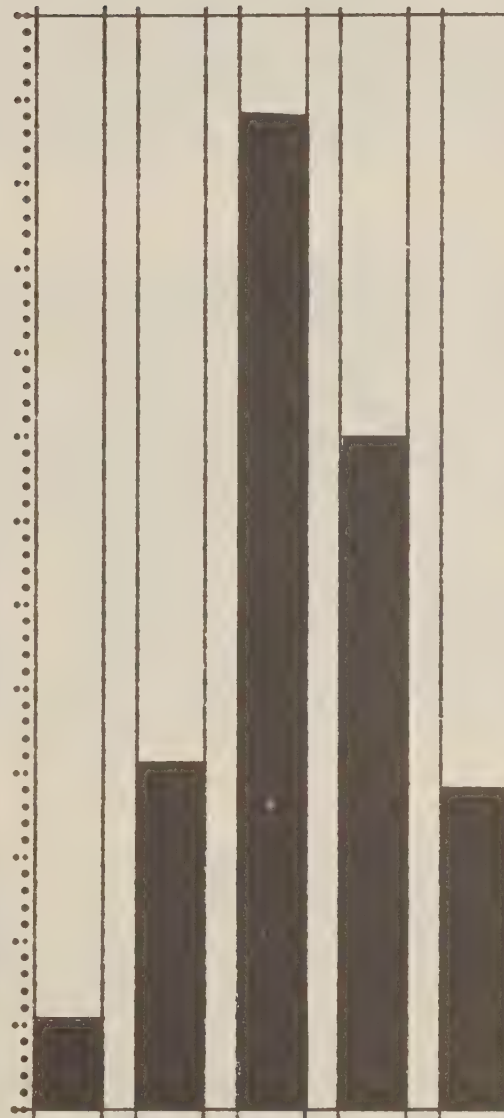
UNABLE TO TRACE

TRACED

57 - 4.8 %

1129 - 95.2 %

1129 REACTORS TRACED TO 851 HERDS



KNOWN INFECTED HERDS

HERDS SOLD OUT

HERDS TESTED

TESTED NEGATIVE

TESTED INFECTED

53 - 6.2 %

207 - 24.3 %

591 - 69.5 %

400 - 47.0 %

191 - 22.5 %

191 INFECTED HERDS DISCLOSED 569 ADDITIONAL REACTORS ON FIRST TEST

CALENDAR YEAR 1962

CHART C
ARKANSAS COUNTIES RECERTIFIED
With Use of
MARKET CATTLE TESTS

<u>Year</u>	<u>Month</u>	<u>County</u>	<u>Market Cattle Tested</u>	
			<u>Number</u>	<u>Percent</u>
1961.....	May	Boone	2390	10.7*
	June	Madison	1829	10.0*
	Sept.	Searcy	1968	15.3
	Nov.	Cleburne	1989	23.0
1962.....	Jan.	Yell	2049	14.4
		Pike	1445	21.8
	Mar.	Van Buren	2087	28.0
	Apr.	Montgomery	3240	40.8
		Polk	2943	34.9
		Independence	4485	25.3
		Perry	1283	19.4
		Washington	13907	47.7
	May	Pope	3521	28.4
		Scott	3457	30.6
	June	Dallas	637	17.4
		Ouachita	964	19.1
		Calhoun	343	10.1*
		Faulkner	5380	33.5
	July	Conway	4641	42.0
	Aug.	Union	1734	28.0
		Sebastian	2774	23.4
	Sept.	Logan	3029	15.5
	Nov.	White	11482	54.4
		Franklin	2331	17.8
	Dec.	Cleveland	1419	27.8
1963.....	Jan.	Randolph	3672	35.0
	Feb.	Sevier	2214	17.6

* 4 counties recertified = partial use of market tests

23 counties recertified = over 15% market tests

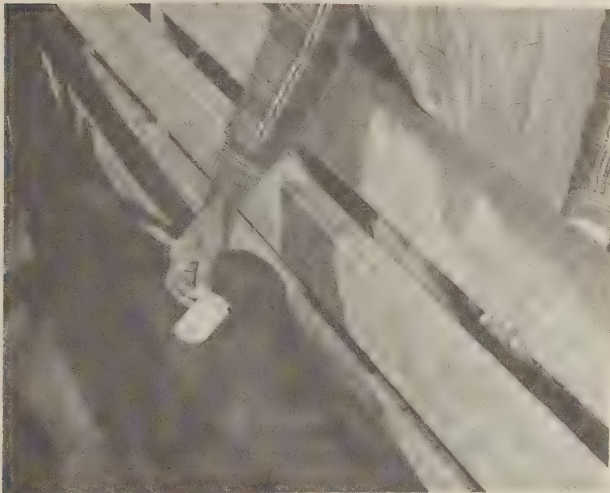
HOW ARKANSAS IS RECERTIFYING ALL COUNTIES WITH MARKET CATTLE TESTING



1. Owner's name and address determined.
Sale tag applied.



2. Cows under 30 months of age tagged
"BRUCELLOSIS "VACCINATE"



3. Cows over 30 months of age tagged
"BRUCELLOSIS NEGATIVE."



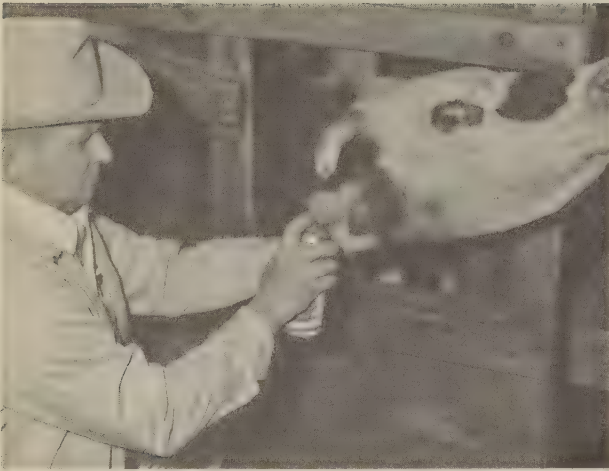
4. All cattle blood sampled and tested
before they're sold.



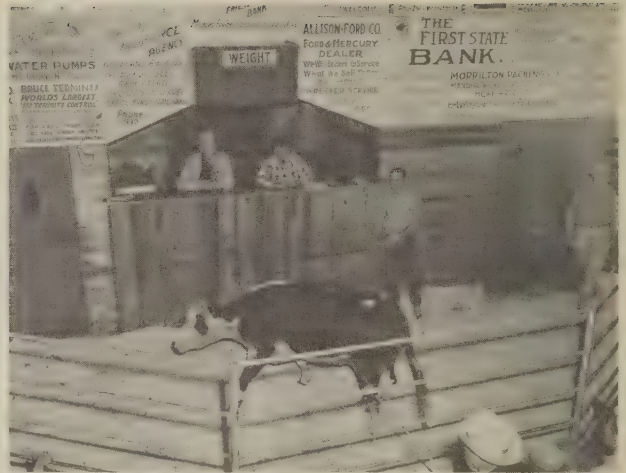
5. Each animal receives two blood tests
from one sample.



6. Infected animals are branded and
placed in isolation pens.



7. To identify exposed animals, right ear is spray painted blue.



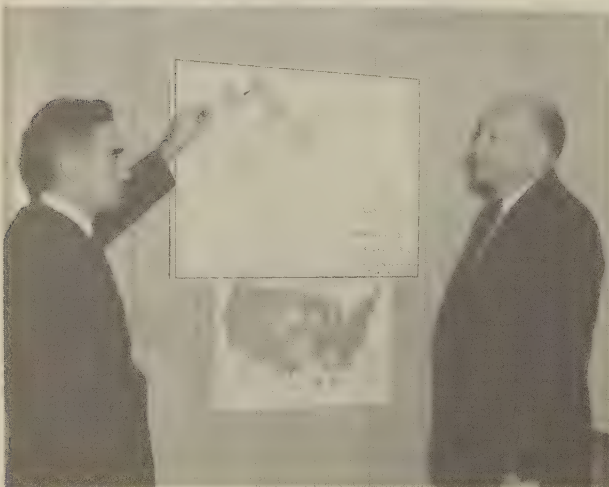
8. At time of sale, the brucellosis status of cow is obvious to buyer.



9. Infected herds are placed under quarantine and tested.



10. At large markets, blood sample is taken at time of slaughter.



11. Program is providing enough data to recertify all counties.



12. Market cattle testing has eliminated 98% of on-farm testing.

DETAILED LEGENDS FOR PHOTOGRAPHS EXPLAINING ARKANSAS'S MCT PROGRAM

1. When cattle arrive at an Arkansas livestock market, a sale tag is applied and the name and address of the owner is recorded. The cattle are handled by market personnel. To insure accuracy and completeness in reporting a State or Federal livestock inspector records herds of origin information.
2. On the way to the holding chute for taking of the blood sample, cows under 30 months of age that have been officially vaccinated for brucellosis receive a yellow back tag containing the words "BRUCELLOSIS VACCINATE".
3. Female cattle more than 30 months of age receive a blue tag which reads "BRUCELLOSIS NEGATIVE". The date of marketing and the cows ear tag number is recorded in the white space in the center of the back tag. A blood sample is taken and she is assigned to a holding pen.
4. All cattle are blood sampled and tested before they are offered for sale. In the majority of the markets, the blood samples are collected by an accredited veterinarian at State and Federal expense. This practicing veterinarian, Dr. Norman E. Gray, collects the blood samples and supervises the movement of infected cattle.
5. In most cases, the blood samples are tested by State or Federal technicians. Test results along with tube number, sale number, tag number, description of animal and herd of origin for each animal are recorded on the market test charts. A portion of each blood sample taken, tested and recorded is submitted to a central laboratory for a conformation test. Each animal receives two blood tests from the one sampling--one in the field, one at the State laboratory.
6. Infected animals are moved from the holding pens, branded on the jaw with the letter "B" and placed in an isolation pen. Cattle with brucellosis must be sent directly to market.
7. When a farmer markets cattle containing one or more reactors, all the cattle from this group are considered exposed even though they test negative. For this reason they are sorted out of the holding pens, placed in a holding chute and marked as exposed cattle by spray painting the right ear a vivid blue. Owner has the option of returning them to his farm for retesting 30 to 60 days later or sending the cattle directly to market, which most do. Paint prevents the cattle from being sold through other markets as breeding cattle and possibly introducing infection into a clean herd.
8. By looking at the back tag, the blue painted ear or the "B" branded on the jaw, the buyer can tell the brucellosis status of the cow. A yellow tag indicates she has been official calfhooed vaccinated. A blue tag--blood tested for brucellosis a few minutes or hours ago and found

free of the disease. The "B" brand--a reactor or infected animal. A bright blue ear--on exposed animal from an infected herd that tested negative.

9. Herds containing reactor animals are placed under quarantine and assigned to a fee-basis veterinarian or a livestock inspector immediately for testing. Should additional infection be located in the herd, State or Federal veterinarians will work with the owner to eliminate brucellosis from the herd.

10. In the larger out-of-State markets, the back tag designed for a national program is used. Cattle are tagged as they enter the market and the herd of origin determined and recorded. Later, during the slaughtering process, the blood sample is taken and the tag attached to the sample tube.

11. Dr. Paul Becton and Dr. David Ibsen review progress made during first two years of Market Cattle Testing. The program is providing enough information to qualify all counties in Arkansas for recertification as a modified certified State. The brucellosis ring test is used effectively to screen the dairy herds. About 80 percent of the heifer calves going back into herds as replacement breeding stock are vaccinated for brucellosis.

12. Market Cattle Testing in Arkansas has greatly reduced the on-farm testing of cow herds for brucellosis. Here Dr. Paul Becton holds one herd card out of 50 to illustrate that about 98 percent of on-farm testing has been eliminated.

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CALIFORNIA'S SWINE BRUCELLOSIS ERADICATION PROGRAM

By
J. E. Stuart, D.V.M., Chief
Division of Animal Industry

Swine Disease Committee is Formed

A few years ago the nation embarked on a program to eradicate vesicular exanthema in swine. It immediately became apparent to those concerned in California that the problems which this program presented to the swine industry members and to the California Department of Agriculture were numerous.

In order to determine further these problems and to help solve them, a committee was established whose members represented not only the swine producers but also saleyards as well as the veterinary profession. Vesicular Exanthema was eradicated and this swine disease committee was instrumental in accomplishing this goal.

Swine production was on the decline in California at this time, yet many in the industry were convinced California offered much opportunity for expansion of this industry. To encourage this expansion, it was quite evident that efficiency must be improved and that effective disease control would greatly improve this efficiency.

Encouraged by the success of the vesicular exanthema eradication program, the swine disease committee approached the Department regarding other disease control programs which would contribute to more efficient production.

A Law is Passed

Brucellosis was one of the diseases presented to the committee as lending itself to a control and eradication program. To further advise the committee on the swine brucellosis situation, a survey of slaughter sow testing was conducted early in 1961. The rather high incidence of infection revealed by this testing was a strong factor in influencing the committee to encourage a brucellosis eradication program.

The desire on the part of the committee to improve the health status of their swine herds, resulted in their sponsoring a legislative bill which was introduced and passed during the 1961 legislative session. This bill became law in the form of an amendment to the Agricultural Code granting authority to the California Director of Agriculture to promulgate regulations as required to control and eradicate swine diseases through limitations on the movement of swine; through tests and vaccinations; and through such other means as may be necessary.

A Program is Formulated

The administrative veterinarians of the Department and the swine disease committee met frequently and formulated proposed swine brucellosis regulations. These proposed regulations were widely discussed at industry meetings throughout the State.

Following these meetings, and after the proposed regulations were well understood, administrative hearings were conducted by the Department at appropriate locations in the State. Industry members and the general public were requested to present testimony in writing or orally regarding the proposed regulations. The evidence received at these hearings was favorable toward these regulations, and they were formally adopted to become effective April 5, 1962.

Provisions of the Swine Brucellosis Control Program

The regulations as adopted were basically those first proposed by the United States Livestock Sanitary Association in 1958 and recommended for approval of the United States Department of Agriculture in 1961. These regulations consist of four main provisions:

1. Swine moving to fairs and purebred sales must originate from a herd known to be negative to a test of all breeding swine within 30 days of movement, or from a validated herd. The first concern of the committee was to improve the swine brucellosis situation through this provision.

Some producers had been participating on a voluntary validated herd plan for many years and were reluctant to expose their animals at fairs or sales. Though this voluntary program had been in effect for many years, only about ten herds were actively following the program.

This regulation limiting movement of swine for exhibition or purebred sales purposes became effective immediately and stimulated increased interest in the existing validated herd program, as well as in the proposed area program.

2. Breeding swine over four months of age moved into California or within the State must have evidence of a negative test within 30 days. Feeders under 160 pounds may also move without test; but if over this weight a negative test is required, or a Department permit must accompany the animals and a hold order is applied at destination. These quarantined animals then move to slaughter accompanied by a Department permit.
3. An area control program was established which required the testing of all breeding animals over six months of age in the control area. An area is declared validated brucellosis free for three years when all herds have been tested and are under control and

the infection revealed is less than 3% of the herds. Market sow testing at time of slaughter may also be used to qualify a herd.

4. The final provision of the regulations provide for the designation of specific counties as control areas. When any of the swine producers desire their county enter the program, they may request the State Director of Agriculture to take the steps necessary to have the county declared a swine brucellosis control area.

A hearing is scheduled, and all swine producers within the county are notified. Federal and State officials participate in the hearing, and if no serious objections are presented, the Director declares the county a "Swine Brucellosis Control Area". The program goes into effect 30 days after filing of the regulation with the Secretary of State.

Fifteen northern counties were first proposed as control areas at hearings conducted for adoption of the swine brucellosis program regulations and were established as such when these regulations became law.

Control Area Program at Work

The control area program is carried on cooperatively by the Animal Disease Eradication Division of the United States Department of Agriculture and the California Department of Agriculture. The regulations specified July 1, 1962, as the effective date that the first control areas would be established.

Soon after the effective date, crews consisting of a State or Federal livestock inspector and a regulatory veterinarian began farm to farm testing. Private practitioners were contracted to do such testing as they were able. A bleeding fee of \$1.25 per head was established, to be paid to the contract veterinarian by the State.

A squeeze chute similar to the one used for cattle was designed and manufactured by a local concern. This chute proved to be of great value on the larger herds, but impractical for small operations due to the time and effort necessary to put it into operating position.

The vena cava method of bleeding is being used almost exclusively. A $4\frac{1}{2}$ inch needle proves adequate for this purpose. A metal ear tag is used to identify tested animals. Swine blood samples will not withstand the rigors of heat and transportation and immediate delivery to the laboratory is essential.

Progress of the Control Area Program

Testing during the first nine months on the area program was conducted on 6,958 eligible swine on 512 premises representing 25,945 swine.

Four infected herds were disclosed and a total of 289 animals were classified as reactors on initial or herd retests. Two of these herds were removed from the infected file following the first retest.

The fifteen counties that were originally established control areas on July 1, 1962, have completed testing and no known infection remains. Ten of these counties have received the joint Federal-State certificate of validation and five have submitted their application.

The Future of the Control Area Program

The control area program has expanded to include 30 counties as of April 17, 1963.

Swine industry members from several additional counties have requested that their counties be declared control areas. Administrative hearings are being scheduled by the Department to receive evidence for or against including these counties in the program.

We expect all of the counties in the State to be in the control area status early in 1964, and the entire State a validated brucellosis free area by 1965.

Acceptance of the Program

We attribute the remarkable acceptance of this program to: (1) an earnest desire on the part of a united and informed industry to improve their disease position, (2) full statewide representation of the industry in discussion of their problem, (3) participation of the industry in developing regulations to solve the problem, (4) recognition of validated herds for exhibition and sales purposes.

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Prepared April 17, 1963, by the Bureau of Animal Health, Division of Animal Industry, California Department of Agriculture, Sacramento, California.

California's swine brucellosis eradication program. (See pictures, page 16).

1. Purchased feeder pigs introduced brucellosis to the first infected herd located by area testing in California. Blood test revealed 14 sows were infected out of 222 breeding animals. Here Jim Cody, livestock herdsman for the Guntert and Zimmerman Ranch near Cottonwood, California, ear tags an infected sow for marketing under official supervision.
2. From now on the yearly blood testing of all breeding animals will be a standard management practice for Jim Cody. Within the year, he plans on having a completely registered Duroc herd. Next year, he will start selling breeding stock. For this reason he is anxious to qualify his herd as "Validated Brucellosis-Free." An area veterinarian of the Bureau of Animal Health, California Department of Agriculture, Redding, California, draws a blood sample.
3. The equipment and footwear of veterinarians taking blood samples are thoroughly cleaned and disinfected before going to next farm. After Cody marketed infected animals, his swine premises were properly cleaned and disinfected.
4. Laboratory test results are made known to the herd owner about four days after blood samples are taken. There are no charges to the owner for bleeding his animals and testing the blood samples for brucellosis.
5. This holding crate was redesigned under the supervision of regulatory veterinarians for the swine brucellosis eradication program. Three restraining devices--from the rear, side and front--hold the animal still for the blood test. This subjects the animal to a minimum of stress and simplifies the bleeding operation.

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CALIFORNIA'S SWINE BRUCELLOSIS ERADICATION PROGRAM ILLUSTRATED

These photographs illustrate the California swine brucellosis eradication program. This program has been expanded from 15 counties to include 30 as of April 17, 1963. California expects all of the counties in the State to be in a control area status early in 1964 and the entire State a validated brucellosis free area by 1965.



1. An infected sow is ear tagged.



2. All breeding swine blood tested.



3. Preparing for the next farm visit.



4. State pays for the laboratory test.

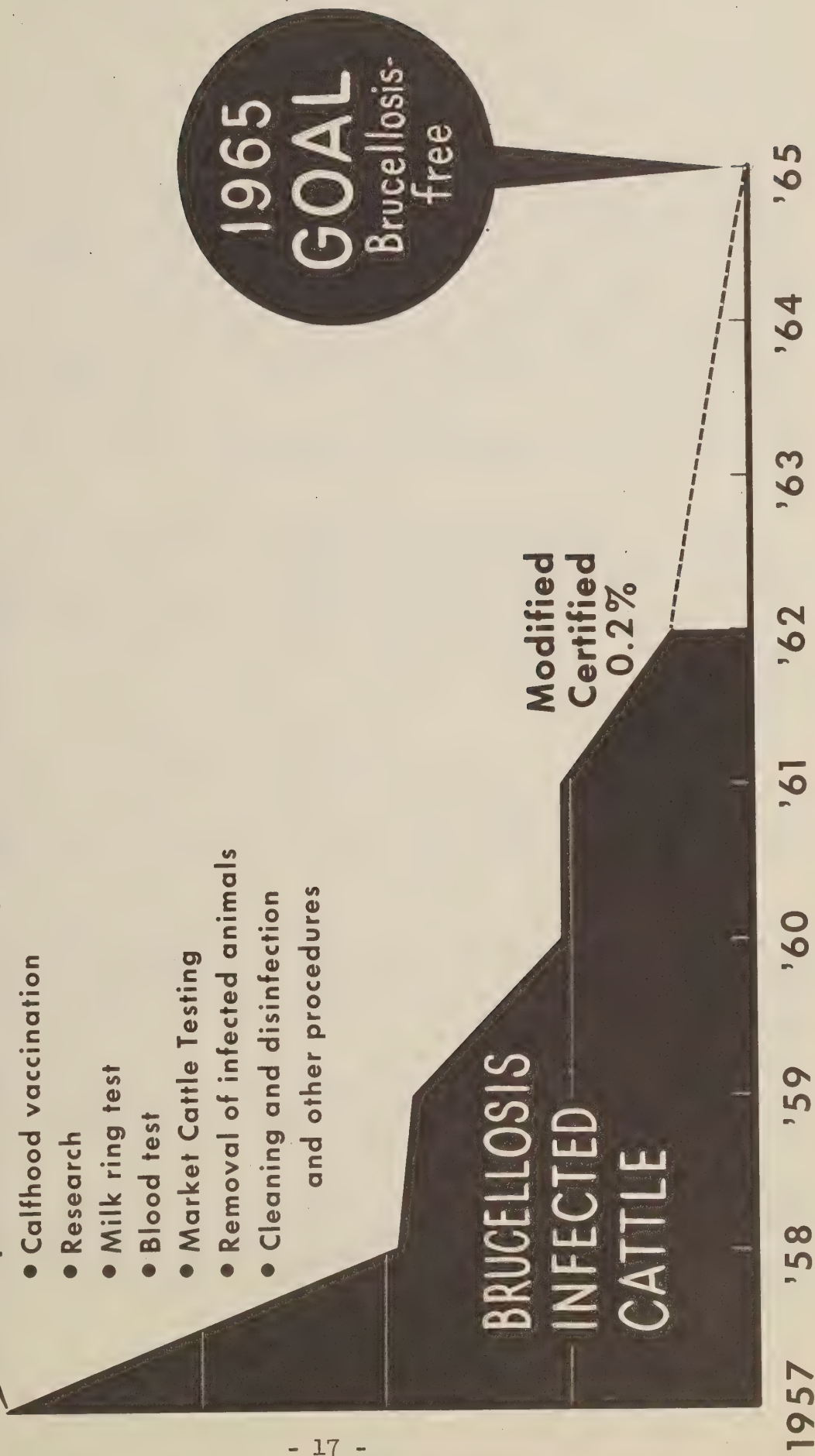


5. A holding crate was redesigned.

CALIFORNIA IS ERADICATING BRUCELLOSIS

2.0% Complete eradication program adopted

- Calfhood vaccination
- Research
- Milk ring test
- Blood test
- Market Cattle Testing
- Removal of infected animals
- Cleaning and disinfection and other procedures



HUMAN BRUCELLOSIS IN THE UNITED STATES

Subcommittee on Public Health
by
James H. Steele, Chairman*

The incidence of human brucellosis in the United States continued to decline, as it has since 1947. It is probably at the lowest level since the disease was first recognized as a public health problem 50 years ago. Preliminary data reported from the states to the Public Health Service lists 411 cases with 18 delayed reports from Iowa raising the total to 429. The preliminary figure for 1961 was 580, and the final 636. The reduction is in excess of 200 cases, or more than 30 percent. This is a considerable decline when compared with recent years (see Reported Human Brucellosis - U.S. 1947-1962). Since 1947 the incidence has fallen more than 93 percent. The leveling-off effect in recent years attributed to the constant level of swine brucellosis has now been broken, and it is hoped that the disease in man will eventually be eliminated as brucellosis is eradicated in cattle and swine.

The distribution of human brucellosis remains about the same even though the incidence is much lower (see maps). Iowa and Illinois reported more cases than any other states, followed by California and Kansas. All the other states reported less than twenty cases, and many reported no cases. The latter includes Maine, Rhode Island, Delaware, West Virginia, South Carolina, New Mexico, Nevada and Colorado.

State Summaries

Alabama reported 7 cases in 1962 compared to only 2 in 1961. Nearly all of the 5 cases on which epidemiological histories were received were in persons who had worked with swine and cattle. One of these, a farmer, was infected with the Brucella suis type as indicated by blood culture.

Alaska had 3 cases during the year, all of which were attributed to contact with reindeer or caribou. In one case caribou milk was said to be the source of the disease. Another patient gave a history of eating uncooked caribou udder. What the incidence of brucellosis is among caribou and reindeer is not known. The reactor rate among cattle in Alaska is quite low.

Arkansas reported 11 cases for 1962 versus 19 the year before. Most of these were in farmers and livestock handlers. Two were individuals who were treating sick animals. There were two housewives and a dry

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cleaner who stated they had no recent contact with farm animals. Arkansas became a modified certified brucellosis area in 1962 (less than 1 percent of the cattle and less than 5 percent of the herds reacted to the blood agglutination test).

California reported 30 cases in 1962 against 20 cases the previous year. Most of the cases were associated with a packing house in southern California, which handles a large number of midwestern swine. Three cases were described as accidents among laboratory technologists and a veterinarian who accidentally inoculated himself with strain 19 brucella vaccine. There were three cases attributed to raw milk and goat cheese. The remaining cases had various histories as to animal contact. California became a modified accredited area in 1962.

Connecticut reported 2 cases, one of which was proven to be caused by Br. suis. This person had worked on a pig farm near Chester, Pennsylvania, where garbage was fed.

Florida had 8 cases during the year compared to 10 in 1961. One of these was a veterinarian who specialized in sterility work.

Georgia reported 15 cases, 5 more cases than last year. All of these cases occurred among farmers or rural people working in town, and among livestock handlers in sales barns, butchers and meat inspectors. One of the latter cases was proven to be the swine variety by blood culture. The blood titers in nearly all cases exceeded 1:1000.

Hawaii had only one case, which appears to be Br. suis as was the case last year. The patient worked in a piggery where swill was fed. Previously there had been an epizootic of abortion among sows on this farm. Three sows had blood titers of 1:30 confirming the presence of infection among the animals.

Indiana reported 5 cases, 2 of which were among packing house workers handling swine. The others occurred among farm-residing persons, including a 9-year-old boy.

Illinois had 57 cases, of which 22 were described as old or chronic cases. Surveillance reports were received on 29 acute cases which included farmers, livestock handlers, and packing house workers. Most of the latter group handled pork products, although some were executives and auditors who did not handle animals or meat. The titers in the packing house employees were very high, in one case exceeding 1:40,000. Br. suis was isolated from one patient. In another case, a miner who had helped vaccinate cattle developed the disease and Br. abortus was isolated from his blood.

Iowa had the lowest number of reported cases since the 1920's when the disease was first recognized in man; 105 cases were reported in 1962 as compared to 219 in 1961, more than a 50 percent drop. There was one fatality in a 16-year-old girl in which Br. suis was recovered from a bone marrow culture two weeks before death. She lived on a farm where

there were cattle and swine. The swine were thought to have brucellosis. Although she had little contact with them, they are considered a possible source of her fatal disease. The remainder of the family, including her parents, three sisters and a brother had no history of disease and their blood titers were negative. Most of the cases on which epidemiological data was received reveal that packing house workers are the largest group affected, followed by farmers and livestock handlers. Hogs were the principal source of infection. Br. suis and Br. melitensis were isolated in 10 instances, all in persons working with swine. Br. abortus was recovered in a packer.

Missouri had only 4 cases, 3 of which were associated with swine. Br. abortus was recovered from a dairy farmer who used raw milk, and who had recently "cleaned" a cow who was later found to be a reactor.

Louisiana reported 9 cases compared to 12 last year, all among farmers except for one veterinarian. Many of these farmers use raw milk and raw dairy products.

Kansas dropped from 58 cases in 1961 to 26 in 1962. The epidemiological histories are not complete but indicate that farmers are the largest group with brucellosis. Many of these cases are attributed to raw milk. Three veterinarians were diagnosed as having brucellosis. The three packers all had histories of handling swine. Kansas had difficulty in getting brucellosis under control but is now beginning to make progress.

Michigan reported 6 cases, 2 of which occurred in pork packers and one in a rendering plant worker.

Minnesota is down to 14 cases after 18 cases last year (1961); four of these were in veterinarians. The other cases include farmers, packers and children. Raw milk is suspected in some cases, especially those involving the children.

Nebraska, with 13 cases, reported the lowest number in many years. Most of the cases occurred among packers handling pork products. One case was reported in a veterinarian.

Ohio had only 3 cases, 2 in packers and one in a veterinarian. This will probably be the picture in other states as brucellosis is eliminated.

South Dakota had 15 cases in 1962 among farmers and packers. One occurred in a veterinarian.

Texas reported 11 cases but their distribution and probably source was not given.

Virginia recorded 13 cases, 6 of which occurred in packers, all of whom handled swine. Br. suis was isolated in one case.

Wisconsin, with only 11 cases, has had a big drop in recent years. Most of these cases occurred in farmers.

Epidemiological Summaries

The 1962 tabulation by occupation and residence places the packers far ahead of any other group. One hundred fifteen cases were reported among them, or 41 percent of the total number of cases, which is about the same level as previously. The farm workers were the next largest group, with 54 (19 percent). They declined from 80 in 1961; however, the percentage of total cases remains the same - 19 percent.

Cases in children and housewives continued to decline, totaling 80 (14 percent) in 1960, as compared to 53 cases (12 percent) in 1961, and 32 cases (11 percent) in 1962.

Veterinarians remain the group with the highest rate of infection. There are about 10,000 veterinarians handling farm animals and meat products. An estimated rate, based on the 14 cases reported in 1962, would be 140 per 100,000.

Swine are by far the most common source of infection for all groups except children and housewives. Cattle are still the chief source of infection among dairy farmers. Raw milk is a rare cause but a few cases are reported with it as the source.

The seasonal distribution of cases from 1953-1962 is summarized in Figure 1. The highest incidence is recorded during the summer months. This finding is difficult to interpret because of the insidious onset of the disease and the time the patient first saw a physician. Various explanations have been offered:

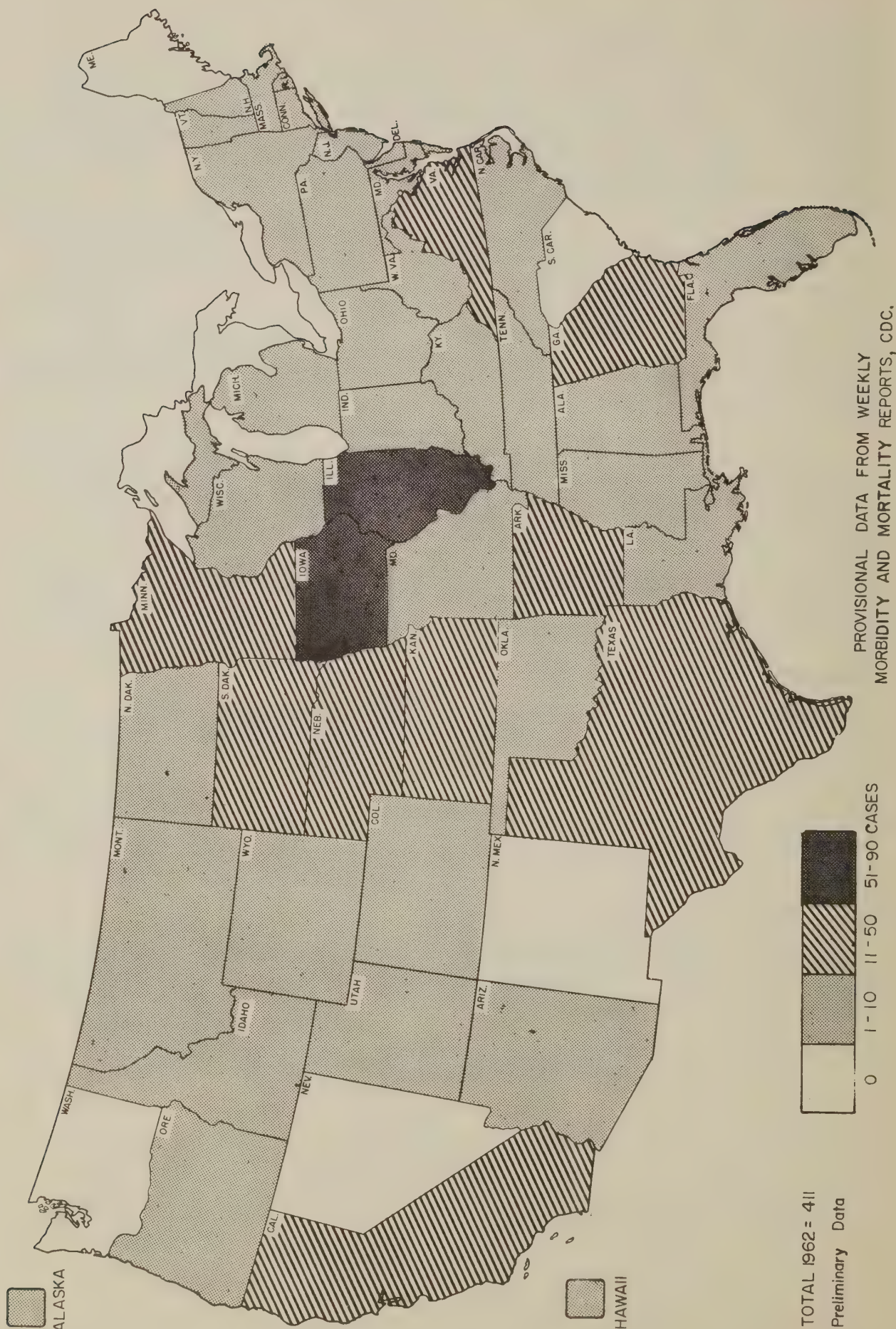
- (1) Springtime exposure to infected tissues when animals are born;
- (2) Late spring and early summer exposure to aborted animals;
- (3) Exhaustion due to long hours during springtime planting;
- (4) Animals which have aborted being sent to market;
- (5) Veterinary practice demands always increase in the spring; and
- (6) Farmers and those busy with livestock in the spring finally get around to seeing their physician.

Conclusions

There is need to intensify the National Brucellosis Eradication campaign and to seek a disease-free status for each state, which would include the elimination of swine brucellosis.

ooOoo

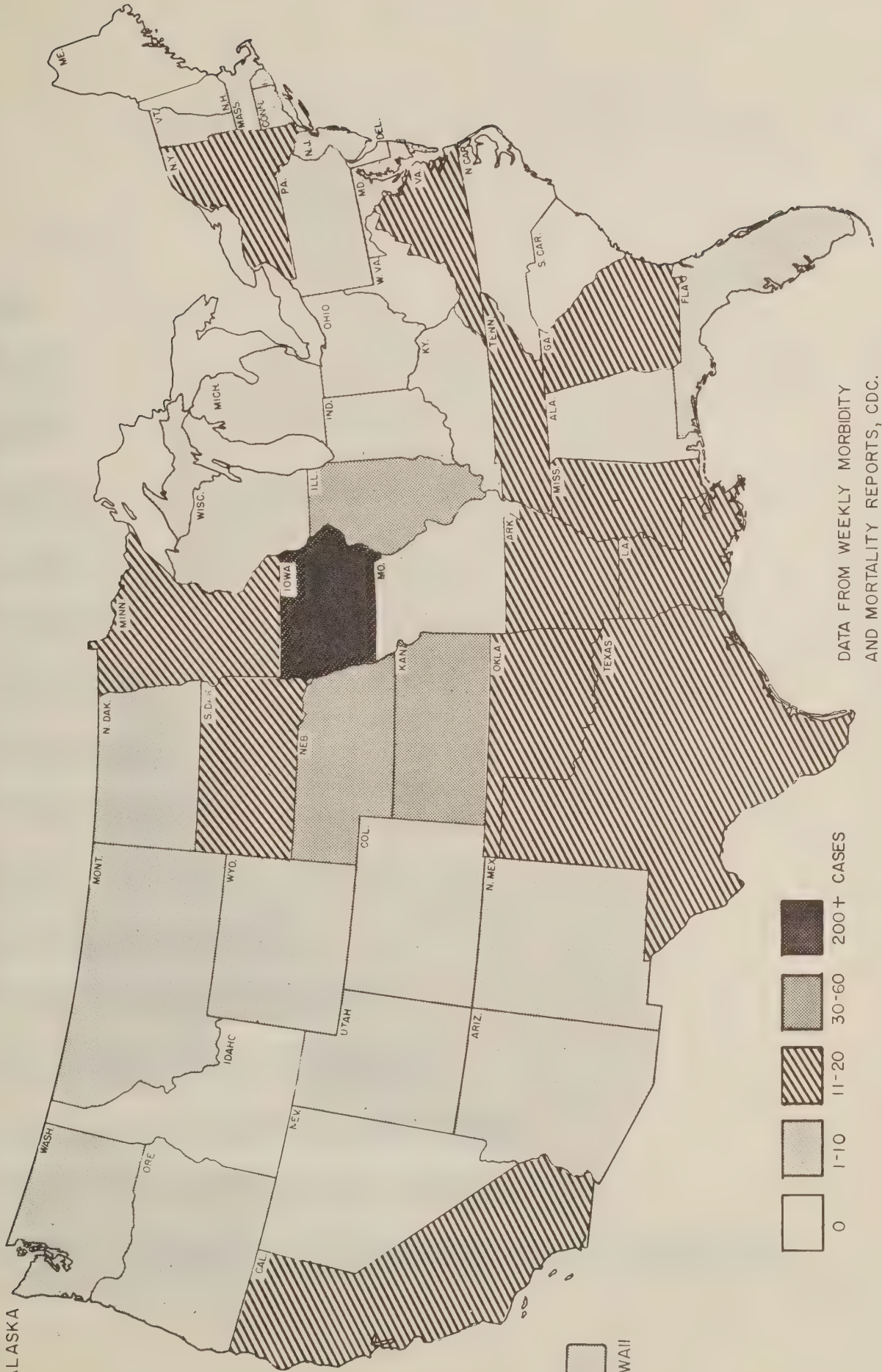
HUMAN BRUCELLOSIS - U. S. 1962*



HUMAN BRUCELLOSIS - U. S. 1961



ALASKA



0 1-10 11-20 30-60 200+ CASES

DATA FROM WEEKLY MORBIDITY
AND MORTALITY REPORTS, CDC.

TOTAL 1961 = 636



HAWAII

REPORTED HUMAN BRUCELLOSIS

UNITED STATES 1947 - 1962

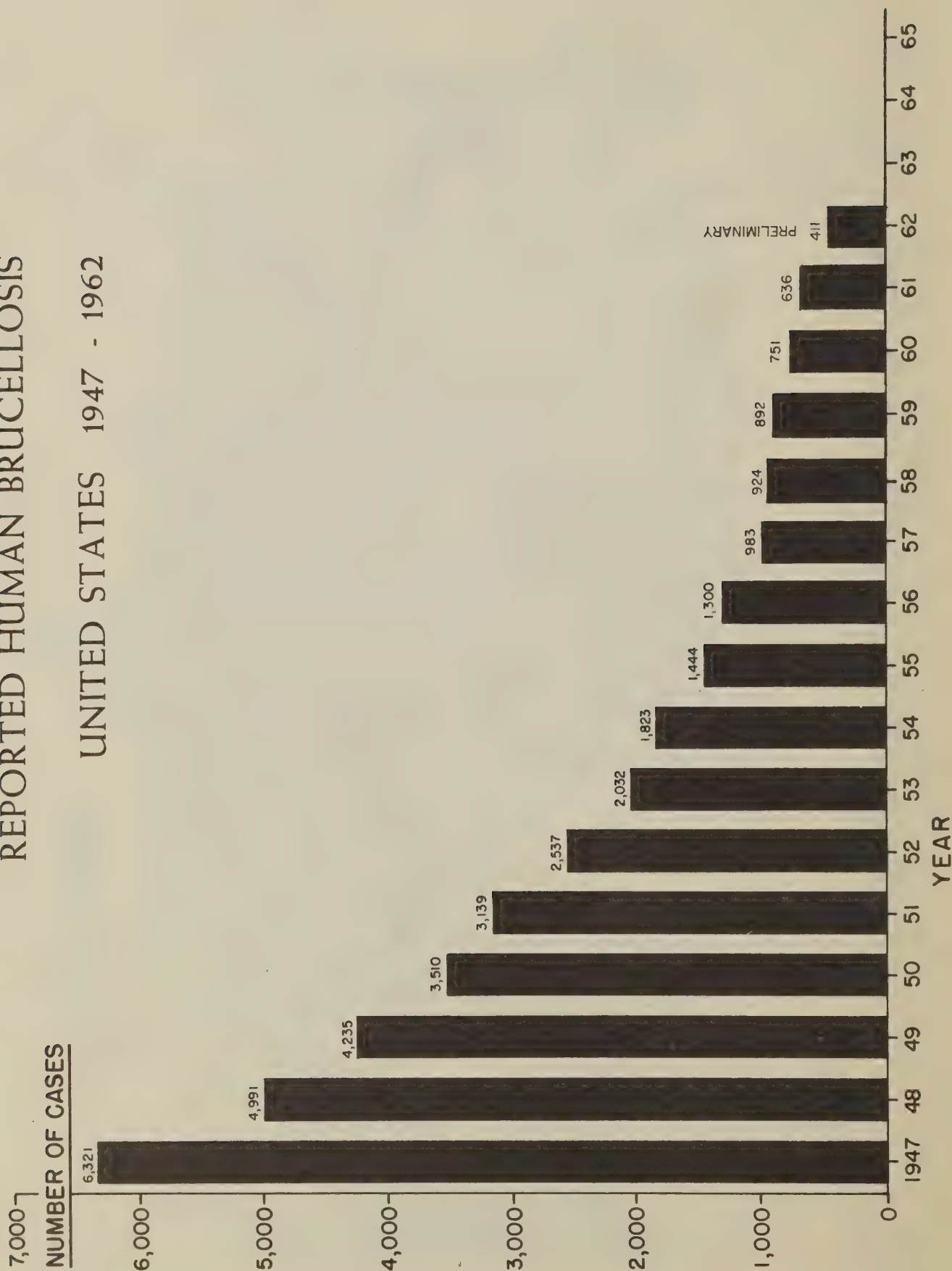
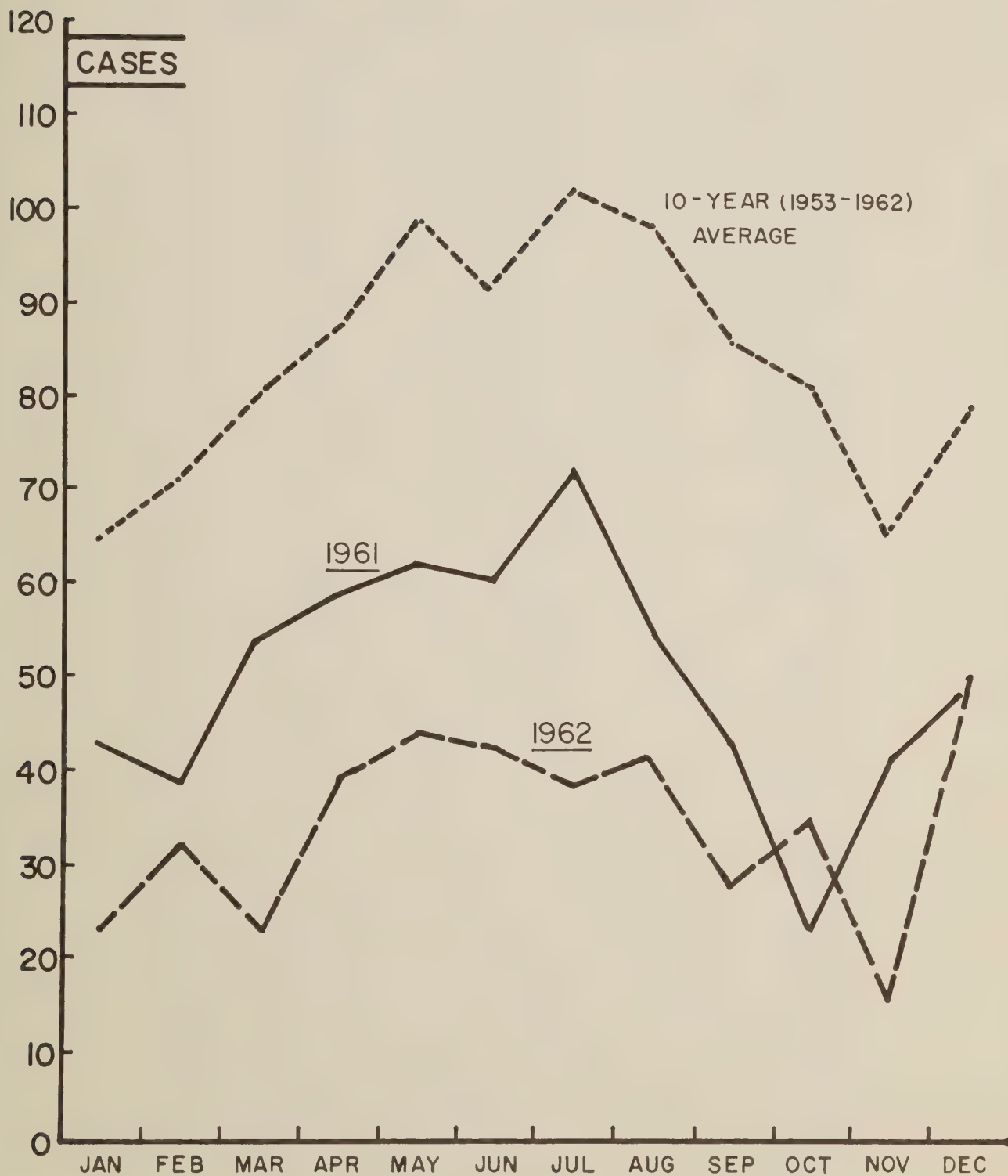


FIGURE 1. SEASONAL TRENDS OF REPORTED HUMAN BRUCELLOSIS



SOURCE: Annual Supplements, NOVS-CDC, 1952-1960.

1962 Data CDC Weekly Morbidity & Mortality Reports.

REPORTED HUMAN BRUCELLOSIS
1962*

STATE	1962	Modified Certified Brucellosis States
		Year
NEW ENGLAND	5	
Maine	-	1950
New Hampshire	1	1949 Certified Brucella-free area
Vermont	1	1957
Massachusetts	1	1959
Rhode Island	-	1958
Connecticut	2	1957
MIDDLE ATLANTIC	9	
New York	4	1959
New Jersey	1	1958
Pennsylvania	4	1958
EAST NORTH CENTRAL	82	
Ohio	1	-
Indiana	7	1960
Illinois	57	-
Michigan	6	1958
Wisconsin	11	1956
WEST NORTH CENTRAL	164	
Minnesota	14	1957
Iowa	87**	-
Missouri	4	-
North Dakota	2	-
South Dakota	15	-
Nebraska	16	-
Kansas	26	-
SOUTH ATLANTIC	40	
Delaware	-	1957
Maryland	2	1959
District of Columbia	-	-
Virginia	13	1962
West Virginia	-	1959
North Carolina	2	1942
South Carolina	-	1962
Georgia	15	1959
Florida	8	-
EAST SOUTH CENTRAL	20	
Kentucky	1	-
Tennessee	10	1959
Alabama	7	-
Mississippi	2	-
WEST SOUTH CENTRAL	39	
Arkansas	11	1962
Louisiana	9	-
Oklahoma	8	-
Texas	11	-
MOUNTAIN	16	
Montana	1	-
Idaho	1	1960
Wyoming	1	-
Colorado	2	-
New Mexico	-	1958
Arizona	6	1959
Utah	5	1958
Nevada	-	1959
PACIFIC	36	
Washington	-	1956
Oregon	3	1959
California	30	1962
Alaska	2	-
Hawaii	1	-
TOTAL CASES	411	Total States 30
Puerto Rico	-	1957

* PROVISIONAL DATA, DHEW-PHS-CDC

** Iowa reported 18 additional cases to Dr. Steele by personal communication

SOURCE: CDC Weekly Morbidity and Mortality Reports

STATE	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Alabama	74	76	43	55	37	29	18	11	10	10	2	7	16	2
Arizona	18	18	16	8	12	1	14	6	4	5	2	6	3	3
Arkansas	44	30	34	37	32	47	40	26	29	22	19	12	9	19
California	164	126	120	100	115	68	48	56	40	37	35	11	29	20
Colorado	249	99	55	39	20	8	17	12	4	1	5	11	2	3
Connecticut	98	78	43	22	15	27	17	5	4	4	2	1	2	4
Delaware	2	2	-	2	-	-	1	-	-	-	-	1	-	-
District of Columbia	3	-	-	4	1	1	-	2	-	-	-	-	-	-
Florida	74	86	36	10	10	10	9	12	12	17	5	5	3	10
Georgia	133	122	95	84	64	63	45	35	39	20	25	32	5	14
Idaho	30	29	24	30	14	9	13	6	7	1	1	3	3	-
Illinois	513	514	442	445	294	243	203	140	133	120	83	71	74	59
Indiana	70	44	42	19	10	27	13	9	11	10	8	9	9	5
Iowa	412	377	549	767	724	556	351	405	360	214	283	361	308	219
Kansas	146	120	134	65	75	59	42	23	48	57	71	112	48	58
Kentucky	21	23	19	17	12	11	15	22	23	20	12	12	6	2
Louisiana	37	30	32	48	23	18	49	29	29	19	15	10	14	13
Maine	12	12	12	4	8	4	1	2	1	2	1	-	1	-
Maryland	57	46	44	39	12	13	6	-	7	3	1	-	1	1
Massachusetts	39	31	22	10	18	15	13	9	15	8	7	1	1	2
Michigan	219	193	93	67	52	68	111	60	52	16	24	15	5	9
Minnesota	302	355	283	189	139	133	151	116	63	51	38	20	15	19
Mississippi	61	66	61	67	46	40	35	21	13	6	8	15	9	11
Missouri	82	115	80	67	45	44	54	39	39	41	41	8	8	1
Montana	4	13	18	9	9	8	7	6	1	5	3	-	3	3
Nebraska	89	46	15	10	3	3	32	8	52	63	35	23	20	32
Nevada	1	4	4	3	-	-	1	-	-	-	2	-	1	-
New Hampshire	8	3	3	1	-	-	1	1	-	-	-	-	-	-
New Jersey	49	35	35	13	16	10	6	1	2	4	4	5	3	2
New Mexico	6	8	1	-	3	2	12	3	2	-	3	1	1	2
New York	248	146	149	89	77	51	42	23	9	7	13	17	9	11
North Carolina	16	25	21	28	21	5	3	2	10	12	7	4	4	8
North Dakota	5	29	38	20	7	13	15	20	26	23	10	17	9	2
Ohio	191	137	41	23	11	15	9	10	12	9	6	3	4	4
Oklahoma	86	144	102	71	68	38	40	31	19	13	5	3	5	11
Oregon	39	45	45	9	7	7	10	10	4	2	8	1	3	2
Pennsylvania	95	115	79	78	42	15	18	18	17	15	11	8	6	4
Rhode Island	10	5	4	4	3	2	3	1	4	-	1	-	1	-
South Carolina	22	31	9	11	6	8	3	2	5	3	3	1	1	-
South Dakota	67	46	10	32	23	23	21	49	33	24	23	11	26	18
Tennessee	70	39	51	44	41	35	38	34	29	29	19	17	10	13
Texas	561	341	288	123	118	104	84	51	32	17	30	13	22	14
Utah	82	75	9	27	18	10	16	8	7	5	10	2	12	7
Vermont	36	3	7	45	32	20	13	4	14	4	5	-	-	1
Virginia	82	73	67	81	47	58	46	30	32	22	21	27	34	18
Washington	43	26	37	62	58	5	11	6	8	7	3	1	-	3
West Virginia	8	7	8	13	7	5	6	9	3	2	-	-	-	-
Wisconsin	302	239	185	140	138	91	116	68	32	31	12	13	5	3
Wyoming	11	8	5	8	4	10	4	3	4	2	2	-	-	2
Totals	4991	4235	3510	3139	2537	2032	1823	1444	1300	983	924	892*	751	636

SOURCE: Annual Supplements, NOVS AND CDC 1948-1961.
Notifiable Diseases

* Included two cases reported from Alaska in 1959 and one case in 1960, and 1 case each in Hawaii and Alaska in 1961.

HUMAN BRUCELLOSIS CASES - 1962
BY OCCUPATION AND PROBABLE SOURCE OF INFECTION

OCCUPATION	PROBABLE SOURCE OF INFECTION										Total	Recrudes- cence
	Swine	Cattle	Cattle and Swine	Sheep or Goat	Packing- house	Raw Milk	Accidents	Other	Not Stated			
Packing house worker	71	8	24		12						115	1
Rendering plant workers		4									4	
Stockyard worker		1									1	
Farm worker												
Livestock Farmers		10	6								16	
Dairy Farmers		7									7	1
Farmers Unspecified	5	11	8			4			3	31		
Wives and Children												
Housewives	2	2	2			4		2	3	15		1
Students		7	1	3		1			2	14		
Children (under 12)		1				1			1	3		1
Professional												
Veterinarians	1	5	7				1 vaccine			14		1
Other			1				2 Lab.			3		2
Other Occupations												
Meat Associated	1		1					3		5		
Miscellaneous	5	10	5				2	2	11	35		7
Not Stated		4	1						8	13		7
Total	85	70	56	3	12	10	5	7	28	276		21

SOURCE: Epidemiologic Case Histories submitted to the Communicable Disease Center by various State Health Departments.
DHEW-PHS-CDC - Atlanta, Georgia, January 1963.

HUMAN BRUCELLOSIS CASES - 1962
BY OCCUPATION AND RESIDENCE

OCCUPATION	RESIDENCE					
	URBAN		RURAL			TOTAL
	MALE	FEMALE	MALE	FEMALE	UNKNOWN	
Packing House Worker	86	1	26		2	115
Rendering Plant Worker	4					4
Stockyard Worker	1					1
Farm Workers Livestock Farmers			16			16
Dairy Farmers			7			7
Farmers Unspecified			31			31
Wives and Children Housewives		6		9		15
Students	5		6	2	1	14
Children (Under 12)			3			3
Professional Veterinarians	7		7			14
Other		2	1			3
Other Occupations Meat Associated	1	1	3			5
Miscellaneous	14	3	15	2	1	35
Not Stated	4		7	1	1	13
Total	122	13	122	14	5	276

DHEW-PHS-CDC

Atlanta, Georgia, January 1963

SOURCE: Epidemiologic Case Histories submitted to the Communicable Disease Center
by various State Health Departments.

CLINICAL ASPECTS OF HUMAN BRUCELLOSIS

by
Norman B. McCullough*

Brucellosis is a disease primarily of domestic animals which is transmissible to man.¹ While the disease has been shown to occur occasionally in a great variety of other animals, for all practical purposes brucellosis in man is related directly to the disease in domestic animals and its elimination as a public health problem rests squarely upon the eradication of the disease from our domestic animals.

Brucella abortus, Brucella suis, and Brucella melitensis are usually found in and cause brucellosis in cattle, swine, and goats (also sheep) respectively. However, they are not strictly confined to their usual hosts and each of these species of animals may be infected with any one of them and transmit them to man. Nevertheless, human brucellosis contracted from cattle is usually due to Br. abortus, from swine, Br. suis, and from goats, Br. melitensis.

All three species of Brucella cause similar illness in man. In individual patients, these illnesses cannot be distinguished on clinical grounds. To establish which of the species is involved requires isolation of the organism from the patient and identification in the laboratory. However, in comparing series of cases, statistical differences do appear. Since Br. melitensis infection in goats in the United States is a minimal problem and confined to a few southwestern states, our major concern is with the cattle and swine varieties. In comparing Br. suis infections in man with those due to Br. abortus, it should be emphasized that illness caused by Br. suis tends to be more severe and is accompanied by a greater incidence of localized destructive lesions and their attendant serious complications. More of this later.

In infected animals Brucella may be found in the blood, lymph glands, and many other tissues. It may be present in the secretions and excretions of the animals. The organism enters man through the apparently normal skin, through mucous membranes, abrasions, wounds and the digestive and respiratory tracts. While in past years unpasteurized milk and other dairy products provided a prime route of infection to man, with more widespread use of pasteurization this route has become of minor importance. At present ninety per cent or more of all human cases in this country derive from direct contact with infected animals or their tissues.² Further, with the lessened incidence of bovine brucellosis the disease

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contracted from swine is assuming increasing importance. The people exposed to brucellosis are primarily those having direct contact with infected animals or their tissues, the cattle and swine breeder, grower, handler, the packing plant employee, and the veterinarian.^{2,3,4,5} The public health problem at hand, then, is mainly confined to those people who derive their livelihood from the animal industry.

Human brucellosis is a variable disease.^{2,6,7} Following exposure there is an incubation period of from five days to several months, usually three to four weeks. The onset of illness may be abrupt with chills, sweats, and high fever, or insidious with low or irregular fever and general malaise. The illness cannot be distinguished on clinical grounds as it mimics many other infectious diseases. It is often diagnosed clinically as influenza. In the acute cases high fever, drenching night sweats, and extreme weakness are predominant symptoms. Generalized aching and pain in the muscles and joints are common complaints, together with headache, lack of appetite, abdominal discomfort and constipation. Occasionally there may be diarrhea but constipation is more often the rule. There may be a host of other complaints. The physical signs are minimal. There may be slightly enlarged, usually non-tender, lymph glands in the neck and elsewhere, and in half of the cases the spleen is enlarged and may be tender. There may be tenderness over the liver. The acute febrile illness lasts for several days or months. One of our patients had high and unremitting fever for eight months. The average duration of the acute illness is about two months. During this period there is usually a severe weight loss. Convalescence is often prolonged and one or more relapses are common. Cases with insidious onset may become acutely ill or continue with low grade chronic disease, and chronic disease may follow the acute stage. Chronic brucellosis with irregular low grade fever, or recurrent bouts of fever, aches and pains, and a general feeling of ill health may continue for several years. In some documented cases the illness has lasted for as long as 25 years. In the average chronic case illness continues for perhaps two to five years. The death rate is low, from one to three per cent; but the prolonged incapacity and suffering in cases with the chronic form of the disease presents a formidable medical and economic problem to the individual.

Many serious complications may occur in brucellosis as a result of local destructive lesions. The symptoms and clinical course in such cases are determined largely by the location, extent, and severity of the local destructive processes. Here Br. suis assumes increasing significance as it tends to localize and produce such lesions to a greater extent than the other species. *Brucella* has been recovered from lesions in practically every organ of the body. One of the more serious conditions is *Brucella* osteomyelitis.^{2,8,9} This most commonly involves the lumbo-sacral vertebrae, the pelvis or the long bones. The vertebral lesions may simulate a herniated intervertebral disc or tuberculosis of the spine. There is destruction of the intervertebral disc and adjacent vertebrae which is severely painful and incapacitating. A similar condition occurs in swine. You have all seen such animals dragging their paralyzed hind quarters. In several extensive and well studied series of cases of human brucellosis,

localized disease, usually osteomyelitis, has been found in from 12 to 14% of the cases. Other complications are suppurative arthritis, usually in a hip or knee, orchitis, chronic prostatitis, epididymitis, subacute endocarditis, cholecystitis, chronic pyelonephritis, hepatic, pericholecystic, and subdiaphragmatic abscesses, localized abscesses in any part of the body, acute or chronic meningoencephalitis, peripheral neuropathies, particularly of the auditory and optic nerves, granulomatous lesions of the eye, and a severe hepatitis followed by cirrhosis of the liver.¹⁰ With localization in the brain, organic brain damage may result.^{11,12} Neuropsychiatric disorders, particularly depressions, occur very commonly in brucellosis and may often dominate the clinical picture.

A few individual instances from the author's experience may serve in further assessing the importance of the more severe forms of the disease.

A packing plant employee, supervisor in a plant in one of our southern states, contracted brucellosis. Br. suis was recovered from his blood stream. His acute illness ran the usual course of a few months duration and he recovered. This was before the days of antibiotics. Some three years later he developed *Brucella* osteomyelitis in one thigh with pain, swelling, and discharge of pus through sinus tracts. This was followed by similar disease in the other thigh. The condition continued and progressed. When seen in consultation thirteen years after his acute illness, there were multiple discharging sinus tracts over both thighs. At surgery, extensive osteomyelitis was found involving the entire length of the shafts of both femurs. Br. suis was recovered from these lesions in pure culture.

A healthy and vigorous 34 year old building engineer in a research institute was exposed to Br. suis as a result of a laboratory accident. He developed a severe acute illness with high fever and extreme weakness. He received antibiotic therapy and the acute illness subsided only to be followed by relapse and further treatment. During the succeeding two years he returned to work for but a single day and suffered some ten or more febrile relapses. He then received rigorous and prolonged treatment with a combination of antibiotics. There were no more overt febrile episodes but he continued in general ill health with aching and pains in muscles and joints, generalized weakness and anorexia. He was totally incapacitated for gainful employment and after several years was placed on disability retirement. Seven years after his acute illness his condition was further complicated by a coronary thrombosis. He is currently still in retirement fourteen years after the onset of brucellosis.

Another patient¹³ contracted brucellosis as a result of an acute outbreak of Bang's disease in his herd of cattle. On several occasions he manually removed a retained placenta from an animal that had aborted. His illness was prolonged and stormy and attended by many complications. The infecting organism was Br. abortus. The patient's course was marked by great prostration, continued septicemia, frequent and prolonged nose bleeds, petechial hemorrhages, abdominal distension and tenderness, and profound mental depression. The temperature rose to 103 or 104°F daily

and he was desperately and critically ill for months. The illness was terminated by antibiotic and chemotherapy. During the course of the illness he became jaundiced and biopsy of the liver revealed an acute destructive hepatitis with many areas of necrosis and numerous Brucella granulomas throughout the substance of the liver. While he recovered from the acute illness, biopsy of the liver two years later showed progressive cirrhosis and he died seven years after the acute illness of liver failure. Autopsy revealed a marked cirrhosis of the liver. Studies on this case established for the first time that necrotizing Brucella hepatitis can lead to cirrhosis of the liver.¹⁰ Since then other similar cases have been reported.

Destructive lesions of the vertebrae were mentioned earlier. This is a most distressing and painful complication. There is usually destruction of an intervertebral disc and of the vertebral bodies adjacent to it with loss of stability of the spine and attendant pressure on nerves with resultant radiating pain and threat of paralysis. Surgical fusion of the spine is necessary to restore stability and prevent irreversible damage to the spinal cord. Disability in these cases persists for years. While this complication is more commonly caused by Br. suis, the author has seen three such cases in patients infected with Br. abortus.

While all patients with brucellosis do not develop such severe complications as those noted here, these are not isolated instances. My files and those of other physicians treating brucellosis contain many such examples.

Although these quoted instances seem dramatic and convincing of the serious import of the disease, from the standpoint of human suffering and disability, they are matched by numerous cases of less overt but long continued chronic brucellosis where laboratory aids are less helpful in diagnosis. Following the acute illness, or originating as an insidious low grade illness, symptoms in these cases may persist for years. The complaints are often multiple and variable, and range through the whole list of complaints confronting the physician in the practice of internal or general medicine. Frequently symptoms which are more usually referable to the psychoneuroses predominate and the underlying chronic brucellosis goes unrecognized. The patient goes from physician to physician without receiving benefit and often under the stigma of a neuropsychiatric diagnosis. The patient's reaction to the disease and attempts to escape from his problem may further complicate the situation. A single case from my files may sufficiently exemplify this situation.

A successful practicing physician contracted brucellosis. Following a brief febrile illness he continued to have complaints of weakness, low grade fever, generalized aching, and episodes of mental depression. The condition continued and progressed. He commenced to limit his practice since he was unable to do a full day's work and finally ceased to practice entirely for a period of eight years. He became addicted to alcohol and later to a narcotic. An episode of frank psychosis supervened. His underlying disease was finally recognized. Following adequate specific and

supportive therapy this man became completely well and resumed the practice of medicine. His health and practice have now been maintained for several years. This again is not an unusual case but attests to the problems presented by chronic brucellosis.

Human brucellosis, then, is most variable, ranging from a mild or severe acute illness to recurrent or chronic disease with many complications.

The diagnosis of brucellosis is established by recovery of the organism from the blood or other tissues of the patient, and identification in the laboratory. If the organism cannot be grown, the agglutination test provides a presumptive diagnosis.

Reasonably effective antibiotic and chemotherapy is available⁷ though treatment must often be intensive and prolonged. Some of the complications require surgical or other specialty management. Bed rest and other general supportive measures are important adjuncts to specific therapy.

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NEW RESEARCH DEVELOPMENTS APPLICABLE TO ERADICATION OF BRUCELLOSIS

Subcommittee on Research
by
C. A. Manthei, Chairman*

During the past two years there have been several new developments in research which this subcommittee believes have significant application to the brucellosis eradication control program in the United States. These developments have to do with vaccination and immunity, characterization and classification of brucellae organisms, characterization of *Brucella agglutinins*, and diagnostic procedures.

Vaccination and Immunity

Relationship of Vaccination Age to Immunity of Cattle Against Brucellosis:

Lambert, et. al. have recently demonstrated that calves inoculated with Strain 19 vaccine subcutaneously at 4, 6, or 8 months of age had relatively the same degree of immunity when they were exposed to virulent Br. abortus during their first pregnancy. Gilman and Wagner showed similar results in calves vaccinated at 4 or 8 months of age, as did King and Frank in small numbers of calves vaccinated at 3, 6, or 9 months of age.

Eight of 24 calves vaccinated at 4 months of age became infected and 5 aborted. Eight of 22 calves vaccinated at 6 months of age became infected and 5 aborted. Seven of 23 calves vaccinated at 8 months of age became infected and 6 aborted. Twenty of 22 nonvaccinated controls became infected and 15 aborted.

Although no significant differences in the degree of vaccinal immunity could be shown among the three groups of cattle vaccinated at different ages, vaccination at 4 months of age materially reduced the problem of persistent postvaccinal titers.

Immunization of Goats and Sheep Against *Brucella Melitensis* Infection:

Elberg and associates developed a nondependent mutant from a streptomycin dependent strain of Br. melitensis (Rev. 1) which was reported to have properties of low pathogenicity and high immunogenicity. The authors demonstrated that 13 goats vaccinated with Rev. 1 vaccine were completely protected against an exposure of 33 ID₅₀ doses of virulent Br. melitensis. Subsequent studies in Spain also showed that a high degree of immunity was

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induced in goats with Rev. 1 vaccine. Research by several other investigators also have confirmed the effectiveness of this vaccine in goats. Limited trials suggest that the length of time immunity may be expected to be effective in goats is 15 months.

The length of time required for Rev. 1 to disappear from tissues of vaccinated goats appears to be associated to some degree with age of the goats at the time of vaccination. Rev. 1 persisted longer in the lymph nodes of female goats vaccinated at 4 to 5 years of age than in those vaccinated at 3 to 8 months. In order to avoid causing abortions or udder infection with Rev. 1 vaccine, vaccination of goats is recommended at least two months before mating.

Although the immunizing qualities of Rev. 1 vaccine have been fairly well established, the stability of virulence of the Rev. 1 strain of Br. melitensis has not been thoroughly investigated. This should be done before this vaccine is recommended for universal use.

Characterization and Classification of Brucellae

Development of methods to improve our capabilities of characterization and classification of members of the genus Brucella is one of the most important areas of brucellosis research. Accurate characterization and classification of brucellae is important for the intelligent interpretation of epidemiological data. Moreover, an efficient brucellosis program of prevention, control, or eradication is dependent on reliable epidemiological information. In 1957, Huddleson proposed the classification of brucellae into three species, with the species Brucella abortus and Brucella suis consisting of three biotypes each and Brucella melitensis having only one biotype. Some other investigators have proposed different classifications for members of the genus Brucella.

Oxidative Metabolic Tests:

Recently Meyer and Cameron reported that oxidative metabolic tests, using a series of amino acids and carbohydrates, quantitatively classified all brucellae, except Brucella neotoma, into three species (Br. abortus, Br. suis, and Br. melitensis). They showed that each species of Brucella exhibited a characteristic metabolic pattern and that biotypes within each species also exhibited the same characteristic metabolic pattern. The oxidative metabolic tests appear to have the advantage of clearly separating all strains of Brucella into three distinct species, regardless of their colonial, antigenic, or other biochemical characteristics. These tests also have disadvantages. They do not lend themselves for routine use in most laboratories because of the time required to conduct the tests on a few cultures and the high cost of equipment. Consequently, cultures that can be typed by conventional methods will have to be referred to laboratories equipped to conduct the oxidation metabolic tests.

Brucella Phage:

Within the last five years, Russian and Polish investigators have reported the isolation of phages that were capable of lysing brucellae, particularly Br. abortus. More recently other investigators generally agree with their findings. The phage frequently used to determine susceptibility of brucella cultures to lysing is Tbilisi (Tb). Morgan's results strongly indicate that lysing activity of Tb phage and four phages from Poland are the same. Meyer showed that only those cultures with oxidative metabolic patterns of Br. abortus were susceptible to lysing by phage. Although the phage susceptibility test compares favorably with the oxidative metabolic tests and is much more easily applied, its usefulness as a taxonomical test appears to be limited to the identification of Br. abortus.

Characterization of Brucella Agglutinins

Lambert, et. al., demonstrated that cattle developed both heat labile and heat stable agglutinins after subcutaneous inoculation with Strain 19 vaccine or after conjunctival instillation with virulent Br. abortus. In cooperative research with Lambert and coworkers, Rose, et. al., demonstrated that the same two seroagglutinins sedimented at different rates by the method of density-gradient ultracentrifugation. The high molecular weight or fast sedimenting agglutinins are the same or are closely related to the heat labile agglutinins; whereas, the low molecular weight or slow sedimenting agglutinins are the same or are closely related to the heat stable agglutinins.

Heat labile or high molecular weight agglutinins were first detected in the blood serums of calves 5 to 7 days after vaccination with Strain 19 and reached their maximum concentration 13 days after vaccination. Heat stable or low molecular weight agglutinins were first detected in the same calves 14 to 21 days after vaccination and reached their maximum concentration 28 to 42 days after vaccination. During the stage of receding vaccinal titers the heat stable agglutinins usually disappeared before the heat labile ones.

The time that heat labile and heat stable agglutinins appeared in the blood serum of cattle after exposure to virulent Br. abortus was similar to that in the blood serum of calves after vaccination with Strain 19. The major difference between infected cows and vaccinated calves was that the heat stable agglutinins in the blood serum of infected animals reached a higher maximum level and persisted for a much longer time in the infected animals.

The evidence presented strongly suggests that low molecular weight agglutinins were specifically associated with virulent Br. abortus infection. Relatively low levels of heat labile or high molecular weight agglutinins usually were associated with exposure to both Strain 19 and virulent Br. abortus, but occasionally have been found in the blood serum of cattle that have no history of association with brucellae. This agglutinin frequently has been referred to as nonspecific.

Supplemental Diagnostic Tests

Most of the diagnostic tests discussed here were designed to supplement and not to replace the standard seroagglutination tube and plate tests for brucellosis of cattle. Their greatest significance is associated with clarification of the brucellosis status of animals which have doubtful reactions to the standard seroagglutination tests, and of the occasional animal which is located in an infected herd but has an insignificant serological reaction. Supplemental tests are most applicable in herds from which brucellosis has not been eliminated with standard test procedures.

Heat Inactivation Test:

Amerault, et. al., demonstrated that most so-called nonspecific seroagglutinins encountered in the standard seroagglutination tube test for brucellosis could be inactivated at 65 C for 15 minutes. Moreover, most of the seroagglutinins which could not be inactivated at 65 C for 15 minutes could be identified as being specific for brucella infection.

The heat inactivation test was particularly efficient in diagnosing infection in cattle during the first 60 days after exposure to virulent Br. abortus. It also identified all of the artificially and naturally exposed cattle which were classified as suspect or reactors to the standard seroagglutination tube test and from which Brucella was isolated.

Complement Fixation Test:

The complement fixation test is not a new procedure for diagnosing brucella and other infections, but recent research has suggested its possible application in brucellosis under defined conditions. Alton stated that the complement fixation and the standard seroagglutinin reactions paralleled each other closely in Rev. 1 vaccinated goats, except when the seroagglutinins receded to a low level the complement fixation titers had disappeared completely. Lambert also demonstrated that the post-vaccinal complement fixation titers receded more completely than the seroagglutinin titers of heifer calves vaccinated with Strain 19. Moreover, 95 per cent of the animals that resisted exposure to virulent Br. abortus, but showed a temporary rise in postexposure agglutinins, remained negative to the complement fixation test.

Whey Agglutination Test (Ring Test Antigen):

The value of this test has been proven in detecting an occasional serologically negative or suspect animal that had udder infection. These usually are chronically or recently infected animals in herds from which it has been difficult to eradicate brucellosis.

Rivanol Test:

Considerable research has been done on evaluating the Rivanol test at the University of Minnesota. These results have not been published,

consequently, are not reportable here. However, in discussions with the researchers at the laboratory, there is every indication that the Rivanol test may have considerable value in supplementing our diagnostic procedures.

Experience with all of these tests emphasizes that they must be conducted exactly as described by the author(s) if the user expects to attain reliable results.

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INFORMATIONAL AND EDUCATIONAL ACTIVITIES CONTINUE TO EXPAND

Subcommittee on Information and Education of the National Brucellosis Committee

by
Herman Aaberg, Chairman*

The activities of the Subcommittee on Information and Education continued to expand during 1962 with special emphasis on two fronts--the swine brucellosis eradication program and the Market Cattle Testing method of eradicating bovine brucellosis.

As the brucellosis eradication program moved forward during the year, these significant developments were given national publicity. This involved the preparation of press releases for the daily press and a more detailed treatment for a carefully prepared list of 250 farm magazines.

Special radio tapes were prepared by both State and National authorities and released to a select group of nearly 400 radio stations from coast to coast. Video tapes, films and other television presentations were prepared and released through USDA facilities to a total of 195 stations with a potential viewing capacity of nearly 10 million people.

Some of the advancements that were given major publicity coverage were: During 1962, four additional States, Arkansas, California, South Carolina, and Virginia were certified as modified areas. In March, Utah established a precedent in the Western States by certifying two counties Brucellosis-Free. Since then this State has certified seven more counties. Previously only Midwestern and Eastern States had been able to completely eradicate brucellosis from county areas.

In June 15, Dooly County, Georgia, became the first Validated Brucellosis-Free swine area in the nation. This was followed with California establishing the Nation's first extensive area eradication program. All breeding swine are being blood tested for brucellosis in 17 northern California counties--an area having about 65,000 hogs. The establishment of eradication areas and the blood testing of all breeding animals in every herd initiated a new area concept in combating this disease. This new State-Federal effort will embrace all counties in California by June 30, 1964.

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Other members of the committee are: R. E. Burleson, Dr. C. W. Burch, H. S. Nicol, Charles Scruggs and Paul Zillman.

By way of progress reports national publicity was given to the Market Cattle Testing program. Only recently Arkansas became the first State to screen enough cattle in all counties with this method of eradication to maintain the State's status as a Modified Certified Area. This was developed into a special feature article for a national farm magazine. The program was documented with both black and white and color photography. Similar articles stressing the advantages of Market Cattle Testing were prepared for other farm magazines.

Likewise, management practices pertinent to eradicating diseases were given publicity. The importance of proper cleaning and disinfecting of premises once infected animals have been removed from the farm or ranch was emphasized by a special farm feature requested by a new dairy magazine started in January of this year. One of the photographs accompanying the article was used on the cover.

To bring about a better understanding of the Market Cattle Testing program, a bovine brucellosis movie was made this year stressing this method of screening cattle at the market place for the presence of brucellosis. The two principal actors in this movie were bona fide cattlemen and much of the photography was taken on their ranches. Both men are members of the American National Cattlemen's Association. One of the men, Bob Laramore, is the chairman of the ANCA's Study Committee on Brucellosis. This movie was shown at the recent ANCA's annual convention. The remarks made by those in attendance were most favorable. Some 50 prints of this movie are being distributed nationally for showing.

In the more advanced brucellosis eradication areas, increased attention is being given to problem herds. Experience has proven that epidemiologists, backed by competent laboratory services, have been able to remove the most persistent infection from these so-called problem herds.

A movie has been developed and produced explaining the role of the epidemiologist and the effectiveness of the several supplemental laboratory tests that can be employed to remove brucellosis from these few remaining herds.

An exhibit explaining the Market Cattle Testing program was designed and developed. It is being exhibited for the first time at this meeting of Livestock Conservation, Inc. At this time, 13 States are recertifying counties with market cattle tests and a total of 33 States are gathering data by this method of eradication.

Two educational pamphlets were given wide circulation throughout the livestock industry. These were "Swine Brucellosis--how you can eradicate it" and "Swine Brucellosis and Human Health".

A program aid pamphlet entitled "What you should know about Market Cattle Testing for Brucellosis" was revised to reflect recent changes in brucellosis eradication methods approved by the United Livestock Sanitary Association and the U. S. Department of Agriculture.

A sustained informational-education program especially tailored to the needs of the vocational agricultural instructors has been discussed with Dr. A. W. Tenney, chief, Agricultural Education Branch, U. S. Office of Education and top-ranking officials in the various States. In recognition of their enthusiasm for this information, three teaching aids are being prepared defining the present status of the brucellosis eradication program and its future objectives.

The first teaching aid will emphasize today's new concept of coping with livestock diseases. First priority should be given to keeping the disease from entering this country. If it should enter, make every attempt to eradicate the disease. If this fails, resort to a control measure as a means of containing the disease and keeping loss to a minimum. The second teaching aid will concern bovine brucellosis and the latest method of eradication--market cattle testing. The third teaching aid will pertain to swine brucellosis.

These teaching aids will be kept updated to reflect current changes in the brucellosis eradication program. The vocational agricultural program involves nearly 463,000 high school students and some 342,000 farmers attending adult evening classes. There are 10,650 vocational agricultural instructors.

During the year a movie concerning swine brucellosis was initiated. The script is nearly finalized. Shooting should start during the early spring months. The story line emphasizes how the presence of brucellosis in either a commercial herd or a registered herd can jeopardize an otherwise successful hog enterprise. The swine producer is informed of the need to blood test his breeding stock annually, to buy replacement stock from only validated brucellosis-free herds, and to take precautions to protect human health.

Postage meter advertising was used for the first time this year to promote the swine brucellosis eradication program. The program was initiated with the swine breed association. Each Association's secretary or editor was supplied with a postage meter plate bearing the following: the Validated Brucellosis-Free herd symbol featuring the hog with a V on its side and the words "Sign of more profit".

A program publicizing those swine herds validated each month has been initiated with the swine breed magazines and the other magazines directed at the swine producer. Several magazines have agreed to publish the names and addresses of these Validated Brucellosis-Free herds. This will not only give recognition to these producers cooperating with the brucellosis eradication program but also provides commercial and purebred hog men with a current listing of brucellosis-free herds as sources of breeding replacement stock.

Certificates recognizing Validated Brucellosis-Free swine herds have been designed and printed. Also, metal farmstead signs have been made and are available for distribution to those producers who validate their herds.

This sign was designed for a five-year period. An adhesive-backed, plastic label is attached to the bottom of the sign indicating the expiration date of the validation.

The envelope stuffer program was continued for both the bovine and the swine brucellosis eradication program. This year, more than 400,000 envelope stuffers pertaining to swine brucellosis eradication have been distributed nationally.

Presently eight movies are available for showing to live audiences or through the television medium. During the year, these movies were shown before 1,482 live audiences attended by more than 62,000 persons. Four of these movies were shown through 143 television outlets to an audience estimated at 50,000 per television showing.

Looking ahead at the coming months, the subcommittee on information and education recommends that special attention be given to the other facets of the livestock industry becoming increasingly involved in the brucellosis eradication program. Where formerly the livestock producer was the main cooperator in implementing the program, now the livestock markets, meat processors, commission firms, Public Stock yards, Meat Inspectors and others are contributing majorly to the success of the eradication program.

The agricultural press and the Agriculture Extension Service will be two prime outlets for disseminating information about current brucellosis eradication methods and progress.

A concentrated effort should be made to keep the total livestock industry informed of the benefits of Market Cattle Testing as opposed to area or down-the-road testing for brucellosis. In reporting the progress of the market cattle testing program, the important role played by all segments of the livestock industry should be emphasized.

Since the future of disease eradication hinges on "a way of thinking", informative teaching aids should be provided to high schools and colleges explaining this progressive concept of managing livestock diseases.

Otherwise, a continuation of present methods should be pursued to inform the livestock industry about brucellosis eradication.

The committee still feels that the 1965 goal for the complete certification of the country as a modified certified area and the 1975 goal for achieving complete eradication is fully realistic. However, this will require an allout effort on the part of those interested in the elimination of this livestock disease.

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PROPOSALS BY THE U. S. LIVESTOCK SANITARY ASSOCIATION
ON BRUCELLOSIS ERADICATION

by
R. W. Smith, Chairman*
Committee on Brucellosis, USLSA

As you are aware the report of the Committee on Brucellosis of the United States Livestock Sanitary Association for 1962 was quite lengthy. We will try and be as brief as possible in making our report to you, but will also endeavor to cover all of the important recommendations made by the Committee.

In dealing with any problem, the first step is to get the facts, the second step is to analyze them from the standpoint of what one wishes to accomplish, then, of course, the third step is to act on the facts.

It has always been the policy of the United States Livestock Sanitary Association to gather all the facts available pertaining to a particular disease that might be under discussion for eradication or control. However, no program of disease eradication can be carried on successfully year after year unless every fact known to science and research has been considered and incorporated into the program. The year 1962 has been no exception to the rule. The Committee received the usual number of resolutions and suggestions for the improvement of the program. All of these suggestions and resolutions were considered in public hearings, and we are sure that everyone had an opportunity to be heard and present any proposals for a change in the uniform rules and regulations.

The Committee realizes that those working in the field must be guided to a great extent by the information furnished them through a report of this kind. If we are going to continue to fight the battle of disease eradication, then we must have the knowledge and experience of those working in the field, whose job it is to put into effect the knowledge that we have gleaned and analyzed down through the years relative to the methods that we employ in eradicating disease from our livestock population. It was also the belief of the Brucellosis Committee that if the program of eradication of brucellosis is to be brought to a successful conclusion, the accelerated program now in effect must continue without interruption.

*R. W. Smith, D.V.M., is State Veterinarian of New Hampshire.

Other members of the committee are: John B. Armstrong, J. S. Brenner, J. B. Finley, Dwight Garner, R. G. Garrett, W. D. Knox, Robert Laramore, C. A. Menthei, J. L. McAuliff, R. J. McClenaghan, S. H. McNutt, C. K. Mingle, L. A. Rosner, J. V. Smith, J. E. Stuart, W. C. Tobin, Gordon Van Vleck, A. O. Wilson, A. E. Janawicz, Col. George Apple and J. R. Bishop.

You will note that Dr. Mingle's report on the eradication program tells us that we now have 30 states and 2 territories on the certified list, and that four states have been added since the convention a year ago.

With these preliminary remarks, we now submit to you the Committee's recommendations, additions and amendments that were made, and approved unanimously by the United States Livestock Sanitary Association.

BOVINE BRUCELLOSIS ERADICATION

Proposed Changes in the Uniform Methods and Rules, 1962

PART I: DEFINITIONS

"Positive" or "Reactor"

(1) Official vaccinates, thirty (30) months of age and over, or official vaccinates under thirty (30) months of age that are parturient (springers) or post-parturient that disclose complete agglutination reaction in the blood titer dilution of 1/200 or higher.

(2) All other cattle more than six (6) months of age that disclose a complete agglutination in the blood titer dilution of 1/100 and higher.

"Suspect"

(1) Official vaccinates thirty (30) months of age and over or official vaccinates under thirty (30) months of age that are parturient (springers) or post-parturient that disclose complete agglutination in the 1/100 dilution and less than complete in the 1/200 dilution.

(2) All other cattle more than six (6) months of age that disclose agglutination in the 1/50 and less than complete agglutination in the 1/100 dilution.

"Negative"

(1) Official vaccinates thirty (30) months of age and over or official vaccinates under thirty (30) months of age that are parturient (springers) or post-parturient that disclose reactions of not more than complete agglutination in the 1/50 dilution.

(2) All other cattle more than six (6) months of age that disclose a reaction of less than incomplete agglutination in the 1/50 dilution.

The "Herd" Test

The herd test shall include all cattle over eight (8) months of age except steers, spayed heifers, and official vaccinates under thirty (30) months of age which are not parturient (springers) or post-parturient.

"Official Vaccinate"

A female bovine animal vaccinated against brucellosis with an approved Brucella vaccine while from four (4) through eight (8) months of age, or a female bovine animal of a beef breed in a range or semi-range area vaccinated against brucellosis with an approved Brucella vaccine while from four (4) to twelve (12) months of age, under the supervision of a Federal or State veterinary official, permanently identified as such a vaccinate, and reported at the time of vaccination to the appropriate State or Federal agency cooperating in the eradication of brucellosis.

Identification of Vaccinated Animals

Official vaccinates shall be tattooed or branded as follows:

(1) The tattoo shall be applied in the right ear and shall be the U.S. Registered "shield and V." The "shield and V" shall be preceded by a numeral indicating the quarter of the year followed by the last digit of the year in which the vaccination was done, for example, "1 V 0" indicates the first quarter of calendar year 1960.

(2) If the brand is used, then the "V" shall be applied in four different positions--one each year over a four-year period to indicate in which year the vaccination was done. The fifth year will repeat the first year, and so on indefinitely. In 1962 the "V" shall be placed with the open end facing upward and so on clockwise indefinitely.

PART II. RECOMMENDED PROCEDURES

Section I. Individual Herd Plans

Plan A. (1) Blood testing of herds, with permanent identification and prompt disposal of positives for immediate slaughter and optional vaccination of calves, and/or

(2) Milk ring testing of dairy herds at intervals of three (3) to six (6) months with all suspicious herds handled according to paragraph (1).

Note: Herds that have passed three (3) successive satisfactory milk ring tests at intervals of not less than four (4) nor more than six (6) months may be considered as having met the brucellosis requirements of Plan A for Grade A milk production.

Plan B. Testing of cattle, permanent identification, and temporary retention of positives pending their disposal for slaughter, with vaccination of calves. Positives may be retained in a quarantined herd for a period not to exceed three (3) years from the date retention of positives was started. All Plan B herds should be retested at least every six (6) months. Plan B shall be discontinued effective July 1, 1964.

Plan C. Calf vaccination without test of any part of the herd. This plan is to be confined to those herds in which the movement of animals is restricted by special permits issued by the State Livestock Sanitary Authority. Plan C shall be discontinued effective July 1, 1964.

Section II. Participation on Area Basis

A. When 75 percent or more of the cattle owners representing at least 51 percent of the cattle in an area have placed their cattle under any one or a combination of the three plans, then the remaining owners shall select a herd plan. The period under which individual herd plans are in effect on an area basis should not exceed three (3) years, at which time the area is obligated to adopt the Modified Certified Brucellosis Area plan. Effective July 1, 1964, only Plan A of the individual herd plans will be recognized under this paragraph.

PART III: INDIVIDUAL CERTIFIED HERD PLAN

Section III. General Provisions

A. Official vaccinates under thirty (30) months of age other than those which are parturient (springers) or post-parturient, are not required to be tested, or if tested are not required to be negative. All other official vaccinates classed suspect may be retained in isolation for retesting until their final determination is made.

B. Additions to certified herds or herds with negative tests shall be limited to the following:

1. c. (1) Official vaccinates under thirty (30) months of age other than those which are parturient (springers) or post-parturient, on certificate of vaccination; all other official vaccinates if negative within thirty (30) days prior to addition.

1. c. (2) All other cattle on evidence of negative retest not less than sixty (60) days from date of negative herd test.

2. c. (1) Official vaccinates under thirty (30) months of age other than those which are parturient (springers) or post-parturient, on certificate of vaccination; all other official vaccinates if negative within thirty (30) days prior to addition.

F. Cleaning and disinfection

Premises shall be cleaned and disinfected under regulatory supervision within fifteen (15) days following removal of reactors. An extension of time may be considered under extenuating circumstances.

PART IV: MODIFIED CERTIFIED AREA PLAN

The provisions of the individual certified herd plan that relate to quarantining, cleaning, and disinfecting shall apply to the Modified Certified Brucellosis Area plan. The extent of the area shall be determined by the cooperating State and Federal agencies. All tests for area certification shall be performed within an eighteen (18) month period. When an area has been legally designated as working toward Modified Certified Brucellosis Area status, the following rules shall apply:

PART IV, Section I, Paragraph B

B. An area may be declared a Modified Certified Brucellosis Area by the application of two (2) milk ring tests (BRT) not less than six (6) months apart, together with a blood test of herds suspicious to the BRT, such other herds as are not included in the milk test, and herds in which the BRT does not represent a majority of the cattle in the herd. The number of positives must not exceed one percent of the cattle and the herd infection rate must not exceed five percent. Infected herds shall be quarantined until they have passed one negative blood test at least thirty (30) days following removal of the cattle classed positive, except cattle consigned for immediate slaughter under permit.

PART IV, Section I, Paragraph C (1)

C. (1) Range and semi-range areas may qualify as Modified Certified Brucellosis Areas for a period of three (3) years if as the result of a blood test of all dairy cattle, all purebred cattle, and not less than 20 percent of the range and semi-range cows over three (3) years of age in each herd, the number of positive does not exceed one (1) percent of the area cattle population (excluding steers and spayed heifers) and five (5) percent of the herds. Two or more semi-annual milk ring tests with blood tests of suspicious herds may be substituted for blood tests of individual dairy herds. The 20 percent test will be discontinued June 30, 1964. After that date the number of animals to be tested in range and semi-range herds shall be based upon Graph CA 4-4, page 24.

PART IV, Section II, Paragraph C (2)

C. (2) Areas may be maintained in a certified status for additional periods of three (3) years provided: subparagraphs (a), (b), (c), (d), (e), (f), and (g), are unchanged.

PART IV, Section III, Paragraph A

A. Cattle from officially Certified Brucellosis-Free Herds or Areas and cattle from negative herds in Modified Certified Brucellosis Areas may enter Modified Certified Brucellosis Areas without being retested for brucellosis. All such cattle shall be individually identified.

PART IV, Section III, Paragraph B

B. Cattle from noncertified areas may enter a Modified Certified Brucellosis Area or an area in the process of such certification when all animals in the herd of origin were negative to the official blood agglutination test for brucellosis within ninety (90) days of the date of entry. Individual animals to be moved must be negative to a final retest at least thirty (30) days from the date of the previous herd test and within thirty (30) days of entry. Official vaccinates under thirty (30) months of age which originate in herds not known to be affected with brucellosis other than those animals which are parturient (springers) or post-parturient need not meet the test requirements of this paragraph.

PART IV, Section III, Paragraphs C and D

Note: Paragraphs C and D are deleted as they are now included in paragraphs A and B.

PART IV, Section III, Paragraph E

Note: This paragraph is now re-numbered paragraph "C"

C. All other cattle over eight (8) months of age, including official vaccinates over thirty (30) months of age and those under thirty (30) months of age which are parturient (springers) or post-parturient, except steers, spayed heifers, and cattle intended for immediate slaughter, shall be required to pass a negative officially recognized blood agglutination test for brucellosis within thirty (30) days prior to the date of entry.

They shall be maintained in quarantine separate and apart from all other cattle and be retested in not less than thirty (30) nor more than ninety (90) days after date of entry. Should reactors be found in cattle held in isolation for retest, they shall be consigned for immediate slaughter and all exposed cattle shall be continued in isolation until they have passed a negative test not less than thirty (30) days following removal of reactors.

PART V: CERTIFIED BRUCELLOSIS-FREE AREAS

Section II, Paragraph B. 4.

B. 4. The number of herds found infected during the entire certification period does not exceed one (1) percent of the area herd population, or one (1) herd, whichever is greater. If the area is making a concerted effort through effective screening programs and extensive epidemiology to locate infected herds and eradicate the disease, only the infection disclosed during the last eighteen (18) months of the certification period will be counted.

PART V, Section II, Paragraph C

C. If the percentage of infected herds exceeds the limit set forth in paragraph B. 4., the area shall revert to Modified Certified Brucellosis Area status and must requalify in accordance with Section I of PART V.

CHAPTER II

PORCINE BRUCELLOSIS ERADICATION--UNIFORM METHODS AND RULES

PART I: INDIVIDUAL VALIDATED HERD PLAN

Section I. Herd Validation.

Validation is made on the basis of two (2) consecutive negative tests on the entire breeding herd 30-90 days apart. This includes all breeding animals six (6) months of age and over. This validation holds for twelve (12) months and applies to Specific Pathogen-Free pigs from such herds.

ESTABLISHING AND MAINTAINING VALIDATED BRUCELLOSIS-FREE AREAS

Section I

A. Definitions

(1) Reactor or Positive Swine

Any swine disclosing a complete agglutination reaction in the blood titer dilution of 1/100 or higher; and any swine in an infected herd or herd of unknown status having a complete reaction in the 1/25 dilution or higher.

(2) Infected herds

Any herd that discloses one or more swine showing a complete agglutination reaction in the blood titer dilution of 1/100 or higher.

(3) Negative swine

- a. Any swine from an infected herd or herd of unknown status that discloses no agglutination in blood titer dilution of 1/25 or higher.
- b. Any swine from a validated or negative herd that discloses agglutination no higher than incomplete at 1/100 dilution.

(4) Negative herds

- a. Any herd that discloses no swine having agglutination reactions higher than incomplete at the 1/100 dilution.
- b. Any herd in which at least 10 percent of the breeding swine have been tested annually in the Market Swine Testing Program for three consecutive years and no reactions disclosed.

(5) Herd test

- a. Shall include all breeding swine six months of age and older.
- b. All swine tested shall be identified with an approved ear tag, tattoo, or other approved procedures.

B. General

- (1) Blood samples are to be tested only by cooperating State-Federal laboratories.
- (2) All activities conducted privately or as part of the official program such as results of agglutination tests must be reported promptly to State and Federal cooperating agencies.
- (3) Infected herds are to be held in quarantine until freed of brucellosis.
- (4) Reactor swine are to be permanently identified by ear tag and brand.
- (5) Reactor swine must be sold directly to slaughter establishments for immediate slaughter only within 15 days of date of identification. An extension of time may be granted under extenuating circumstances.
- (6) Buildings, farrowing pens, equipment, etc., are to be cleaned and disinfected following the removal of reactor swine or the entire herd.
- (7) Replacement swine may be added without test if procured directly from Validated Brucellosis-Free herds or negative herds in Validated Brucellosis-Free Areas.
- (8) All other replacement swine shall have passed a negative test and be held in isolation until passing a second negative test at least 30 days after the first in cases of boars and open gilts or after farrowing for bred sows and gilts.

- (9) All swine kept for feeding purposes shall be kept separate and apart from all breeding swine.
- (10) The official brucellosis eradication program shall be supervised by full-time employed State and/or Federal veterinarians.

Section II. Area Validation

- A. All breeding herds in the eradication area must qualify under one of the following within an 18-month period:

- (1) Negative herd test, including all breeding swine six months of age and over.

Note: Owners desiring a Validated Brucellosis-Free Herd will be required to have a second negative herd test 30-90 days after the first.

- (2) Establish negative herd status in the Market Swine Testing Program.

Each year for no less than three (3) years, ten (10) percent of breeding swine in the herd or a minimum of one (1) animal, whichever is greater, shall be blood tested.

- (3) Infected herds are to be held in quarantine until freed of brucellosis.

Owners of infected herds have the option of selecting one (1) of the three (3) recommended plans described under Chapter II, Porcine Brucellosis Eradication -- Uniform Methods and Rules, paragraph "B."

- (4) The eradication area will qualify as a Validated Brucellosis-Free Area provided the herd infection rate has not exceeded three (3) percent during the 18-month period and provided all herds in the area have attained a negative status prior to the date of declaration as a Validated Brucellosis-Free Area.

Section III. Area Revalidation

- A. The designation, "Validated Brucellosis-Free Area" will be granted for a 3-year period subject to removal if the requirements for maintaining this designation are not carried out.

- B. Requirements for maintaining a Validated Brucellosis-Free Area:

- (1) Test of all breeding swine six (6) months of age and over during last 18 months of validation period, and/or

- (2) During each year of the 3-year validation period, each herd within the designated area must blood test at least 10 percent of the breeding swine over six months of age or a minimum of one animal, whichever is greater. If one-half of the required tests are not reported by the end of the first 18 months of the 3-year validation period, it will be necessary to blood test all breeding swine in the herd before the expiration of the 3-year period.

C. Herds found to be infected during the period an area is designated a Validated Brucellosis-Free Area:

- (1) Infected herds are to be placed under quarantine until freed of brucellosis.
- (2) Owners of infected herds have the option of selecting one of the three recommended plans for eradication of brucellosis described in Chapter II, Porcine Brucellosis Eradication-Uniform Methods and Rules, paragraph "B."

D. General

- (1) Reactor animals are to be permanently identified and moved under permit for immediate slaughter only at approved slaughtering establishments.
- (2) Buildings, farrowing pens, and equipment, etc., to be cleaned and disinfected following removal of reactors or the entire herd.
- (3) The accumulated level of infection for a Validated Brucellosis-Free Area may not exceed five percent of the herds or one herd, whichever is greater, in the area over the three-year validation period.

E. Movement of swine into Validated Brucellosis-Free Areas

- (1) Swine originating in Validated Brucellosis-Free Herds or negative, nonvalidated herds in Validated Brucellosis-Free Counties may enter a nonvalidated herd without test provided such swine are moved directly and have not been in contact with swine of lesser status.
- (2) Swine originating in herds not described in paragraph (1) must have passed a negative test within thirty (30) days prior to date of entry, be held in isolation, and pass one negative test within 30-60 days before entering the herd.
- (3) Swine for feeding purposes may be held on negative, nonvalidated and validated, herd premises without test provided such swine are held in complete isolation, separate and apart from all breeding stock.

- (4) Swine consigned to slaughtering establishments in a Validated Brucellosis-Free Area are to be transported directly to the holding pens at the slaughter establishments.
- (5) All swine entering a Validated Brucellosis-Free Area shall be transported in vehicles properly cleaned and disinfected prior to loading unless consigned directly to a slaughter establishment.

This Resolution was presented to the United States Livestock Sanitary Association as a part of the Brucellosis Committee's report for 1962. The Resolution was then turned over to the Resolutions Committee for their consideration and action. The Resolutions Committee unanimously passed this resolution and it was unanimously adopted by the Association.

RESOLUTION

This Committee has heard many complaints against the unrestricted and continuous interstate movement of untested cattle of unknown origin to Approved Markets and from market to market within the States. There is increasing evidence of the extent to which this practice is retarding the eradication programs of the various States. It is now evident that the Federal Interstate Regulation has permitted such movement especially by dealers and market operators who have neither the interest nor the desire to cooperate in the eradication effort.

It should be noted that "Specific Approval" as provided for in the regulation is permissive and was primarily intended to facilitate the interstate movement of cattle by the producer to the market serving the area and until the area could be Certified. It is now evident that dealers and market operators alike have taken advantage of an exemption originally intended for the producer. The continuous movement of unidentified cattle from market to market has favored if not encouraged diversion; has made it impossible for the States to determine the origin or status of such animals, or to regulate their movement within the State. Furthermore, the status of cattle from the qualified herd in the Modified Certified Area and its intended advantages to the producer of such cattle is lost.

The members of this Committee believe that the Federal Interstate Regulation in its present form has served its original intended purpose and that it is now favoring the dissemination of the disease within Certified Areas and retarding the progress of the eradication program in noncertified Areas. Since this is now becoming a documented fact, this Committee recommends:

- (1) That the Animal Disease Eradication Division of the United States Department of Agriculture restrict the privileges extended to Specifically Approved Markets under the Regulation: and,

- (2) That the Secretary of the United States Department of Agriculture immediately amend the Regulation to provide restrictions on cattle moved interstate as follows:

"Cattle moved interstate from a market, dealers premise or noncertified area to a Specifically Approved Market shall be tested and negative for brucellosis and released: (a) under permit when consigned to a farm for breeding or grazing purposes, subject to quarantine and retest in not less than thirty (30) nor more than sixty (60) days; or, (b) under permit for direct movement to a second "Specifically Approved Market" one time only; declared as to origin, and, provided that movement thereafter is to a farm under the permit, quarantine and retest provisions of (a); or, under permit to a feedlot; or, under permit to an approved slaughtering establishment; or, under permit to a stockyards market operating under full-time Federal inspection and are slaughtered.

- (3) That the Secretary of Agriculture amend the Regulation to eliminate the "Specifically Approved" status of all markets effective January 1, 1964.

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THE COOPERATIVE STATE-FEDERAL BRUCELLOSIS ERADICATION PROGRAM

A Progress Report
by
C. K. Mingle*

Brucellosis will be eradicated from the United States. This will be accomplished with the tools presently available. Once these facts are acknowledged by all persons directly or indirectly associated with the cooperative State-Federal brucellosis eradication program, early success will be assured.

If anyone doubts that brucellosis can be eradicated, it is because he has not sought adequate knowledge concerning the efficacy of the many useful diagnostic and epidemiologic procedures available, or has refused to view them in the light of a total uncompromising program.

This is an urgent appeal to doubters everywhere that you immediately seek to satisfy yourselves that this disease will be wiped out. Investigate the successes of the past. Learn the values and applications of the useful tests and procedures. View brucellosis eradication as a dynamic developing program with new activities and procedures ever available as each phase is completed. Adopt a positive approach and let your new-found confidence and enthusiasm be communicated to everyone you contact as the Nation moves toward its goal of brucellosis eradication. Draw upon the accomplishments of the past to prove the goals of the future. Be ready and quick to defend the program when it is attacked with unwarranted criticism. Success depends upon you!

Past Accomplishments

In retrospect, the accomplishments of the past have been nothing short of phenomenal. In spite of the fact that not all areas have yet become active in eradicating the disease, the incidence of brucellosis has been reduced more than 90 percent throughout the United States. Most of this has been done since 1954. Human cases of brucellosis, once reported by the thousands in the U.S. each year, have been cut to less than 500 in 1962. Early reports indicate that another record low will be established during 1963.

There are almost 750,000 commercial dairy herds in the United States. The majority of these had brucellosis at some time in the past; a conservative estimate would be 400,000. Compare this with the most recent milk ring testing data which indicate that approximately 8,000 U.S. dairy herds may have brucellosis at present. About 392,000 dairy herds have been freed of the disease! Most of the 8,000 infected dairy herds are in areas

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which have not yet undertaken a complete brucellosis eradication program. Although noncertified states have only 42 percent of the commercial dairy herds, they have almost 5,000 (63%) of the infected dairy herds. The incidence of brucellosis among dairy herds in certified states is, on the average, only half that in noncertified States. A number of certified states have no known infected dairy herds at all.

Surveillance Programs

Under the milk ring and market cattle testing programs, eventually all infected herds will be disclosed. Frequency of surveillance holds the key to eradication. All program planners must recognize this fact and inaugurate, implement, or expand these procedures.

Market Cattle Testing Program

The market cattle testing program is becoming the most important single factor in the drive for brucellosis eradication. Not only will this permit a successful area certification program, but it will provide the frequency of surveillance needed to minimize the spread of brucellosis. Market cattle testing must be initiated in all areas not now utilizing the principle. It must be expanded and augmented in those areas in which it is not being fully exploited. We must recognize the fact that we do not yet have an adequate market cattle testing program in operation; in 1962 only 25 percent of its potential had been realized.

There were 2,197,427 cattle tested at the various markets under this program during 1962. A great many infected herds were disclosed as a result of tests of herds of origin of market reactors. However, much remains to be done to effectively utilize the information becoming available. A number of states do not yet attempt to test the herds of origin of all market reactors. These states are using the information only to divert infected animals from channels of trade to slaughter. The outstanding results apparent in states with comprehensive market cattle testing programs leave no doubt as to the merits of this procedure in the brucellosis eradication effort. It has been demonstrated again and again that cattle of unknown status in channels of commerce have a higher incidence of brucellosis than does the population as a whole. The disease is frequently transmitted from herd to herd through this medium. It makes sense to require brucellosis tests of animals of unknown status, and those which are slaughtered. It also makes a great deal of sense to require adequate identification of all animals consigned to markets so that they can be traced to herds of origin if brucellosis is found.

In spite of these facts, there are those who have not yet accepted the principles of market cattle testing. Many states have no plans at this time to apply market testing to their individual situations. Too many have the mistaken idea that the market cattle testing program is only a "back tagging" program, and that it just will not work for them. On the contrary, back tagging is only one of the many satisfactory methods of animal identification. Many states have already solved the problems associated with

market cattle testing, and all others should benefit by their experiences. It took ten years for all states to realize the value of the milk ring test and place it in operation. It must not take that long for all states to accept and initiate an effective market cattle testing program.

New Color Film, "MCT"

A new motion picture explaining the mechanics of the market cattle testing program was produced by the U. S. Department of Agriculture during 1962. The title is "Market Cattle Testing for Brucellosis." Interested cattlemen in Wyoming and Colorado provided many of the scenes and also appeared as principal actors. The picture is particularly applicable in the Plains States and other western areas, but it is also of interest throughout the remainder of the United States. The explanation of the program given in the film applies to cattle maintained under range conditions. However, the principles of the market cattle testing program are similar, regardless of local animal husbandry practices. Variations can be explained following presentation of the film when it is shown in other than range areas. It is hoped that every cattleman in the noncertified areas of the Nation will have an opportunity to view the picture and draw his own conclusions as to the significant benefits of the market cattle testing program and brucellosis eradication.

Program Planning

Just as every state now has a well planned civil defense emergency organization, every state should also have a well formulated projected plan for brucellosis eradication which sets forth the approximate schedule and means for adopting and implementing every useful advanced phase of the brucellosis eradication program. These plans of action should be reviewed at frequent intervals to assure that they are up to date and in line with available funds, new knowledge, and current program needs.

"Problem Herd" Program

The "problem herd" program is now in operation in 24 states. In this program, more than a thousand herds have already been freed of the disease. Not a single such herd has failed to respond when all useful tests and procedures were utilized and recommendations fully carried out. The fact is unmistakable--that brucellosis can be eradicated in every herd found infected. In no case has there been a failure to eradicate the disease when a complete program was followed. It remains only to find the infected herds.

The experience of Wisconsin can be cited as one example. Every herd with persistent infection has been freed of brucellosis. There are no brucellosis quarantines of long standing in that State. Ten years ago (in 1952) more than 150,000 reactors were disclosed in Wisconsin; this compares with only 973 during 1962--a reduction of 99.7 percent in the incidence of brucellosis! Wisconsin has 2,532,000 cows over 2 years of age. The incidence of brucellosis during 1962 was less than 1 reactor per 2,500 cows. Recent data projected for 1963 indicate that the incidence of

brucellosis will be less than 1 reactor per 6,000 cows in that State. When these facts are known, can anyone sincerely believe that brucellosis will not be eradicated?

New Color Film, "Exposed"

A fine new educational film on the "problem herd" program is available. Entitled "Exposed, Brucellosis in Problem Herds," it portrays many of the useful diagnostic and epidemiologic procedures commonly carried out in herds with brucellosis problems. The movie is especially impressive in setting forth the technical excellence and knowledge of the trained brucellosis epidemiologists. It is highly recommended for screening in all areas which are certified, and in other areas which seem to be lagging because doubts exist as to the adequacy of present knowledge concerning brucellosis eradication. It is also an excellent training medium which can be used to advantage in introducing new laboratory personnel to the complete brucellosis eradication program.

Reactors Disclosed

Another way of illustrating outstanding progress is to review the number of infected animals disclosed annually in the United States. In 1956, when less than one-third of the Nation was engaged in a complete area program, there were 366,524 reactors disclosed. In 1962, with more than 80 percent of the United States actively participating, only 131,806 reactors were found. At present, 75 percent of the infected animals are being disclosed in noncertified states. Even more striking is the fact that 12 noncertified states now account for 70 percent of all reactors in the Nation. One noncertified state, alone, is now finding 22 percent of all reactors.

New Hampshire's Success

As you review the individual state reports in this book, you will find many accounts of outstanding progress. However, the most unique is that of New Hampshire. Since this was the first state to achieve Certified Brucellosis-Free Area status, it is of universal interest. In the almost 3 years of free status, brucellosis has been found in only 16 New Hampshire herds. (There are more than 6,000 herds in the State, and at one time approximately half of them had brucellosis.) Of the 16 infected herds, 13 have revealed only 1 reactor each. One herd with multiple reactors was freed of the disease some time ago. Of the two remaining, one belongs to a man with both a dairy and cattle-dealer business. Lest there be any qualms, a tight quarantine is in effect on the herd, and brucellosis has not escaped from the premises. The one remaining infected herd has been a continuing problem, largely because the recommendations of the brucellosis epidemiologists have not been carried out. The owner of this herd recently suffered a severe attack of brucellosis and required hospitalization. It is hoped that the problem may now be solved with his full cooperation.

Swine Brucellosis Eradication

The swine brucellosis eradication program, highlighted in my report to this Committee a year ago, has been initiated in a number of states. Most of the activities to date have been in relation to establishing Validated Brucellosis-Free Herds. Dooly County, Georgia, however, went on to complete an area eradication program and became the first Validated Brucellosis-Free Area in the United States. California has launched the most ambitious program of swine brucellosis eradication undertaken up to the present time. It is anticipated that all breeding swine will be tested over the next two years, with the entire State achieving Validated Brucellosis-Free Area status by 1965. Already a number of northern California counties have been completely tested.

All regions of the Nation are encouraged to explore ways and means of implementing the swine brucellosis eradication program at the earliest time consistent with sound program management. It is becoming evident that the incidence of swine brucellosis is decreasing. Recent data indicate fewer infected herds than just a few years ago. Many areas have adopted market swine testing programs to assess the situation and to move toward eradication. Such surveys have been promising in relation to the eradication of swine brucellosis in the near future. It is hoped that each state will come to grips with the task, recognizing that brucellosis eradication means exactly that--eradication of the disease in every susceptible species of animal, domestic or otherwise.

Brucellosis in Wild Animals

The only species of wild animal in the original 48 United States which is known to commonly harbor and perpetuate Brucella is bison. A number of herds throughout the Nation are diseased. Steps are being taken to deal with this situation. Much is known about brucellosis in bison, but because of the limited number of herds, the knowledge has not been widely disseminated. No particular problems are foreseen in eradicating the disease from the bison herds.

Certified Brucellosis-Free Areas

There were 50 Certified Brucellosis-Free Areas added to the list during 1962, bringing the total to 150. New Hampshire remains the only State which has achieved this status. However, Alaska, Maine, Massachusetts, Connecticut, Rhode Island and Utah are very close. As more experience is gained, it is expected that this phase of the eradication program will accelerate. Connecticut, Maryland, Utah, Puerto Rico and the Virgin Islands qualified their first free areas during 1962. In January 1963, Idaho submitted its first free country. Many additional states expect to enter the picture in the very near future.

Modified Certified Brucellosis Areas

During 1962 there were 226 counties newly established or reinstated as Modified Certified Brucellosis Areas, and 48 counties temporarily lost, for a gain of 178. There were 50 counties transferred to the Certified Brucellosis-Free Area list, leaving a net increase of 129 modified certified counties for the year.

Arkansas, South Carolina, Virginia and California, in that order, all attained statewide Modified Certified Brucellosis Area status during 1962, the greatest number since 1959. Recent reports indicate that Missouri has completed testing and will request certification for the remaining five counties any day. Alaska, Illinois, Kansas and Kentucky also hope to certify during 1963. There are seven states, however, which do not expect to complete modified certification before June 30, 1965. It is sincerely hoped that something can be done to accelerate the program in each of these states so that this, the national goal, will be attained. Economy dictates that brucellosis must be eradicated at the earliest possible date in all states to ease the cost in all areas. Modified certified status represents a commitment to wipe out brucellosis, and, therefore, is the first milestone on the road to eradication. With initial certification achieved, eradication is within sight.

Progress During 1962

The number of lots of cattle blood tested continued to increase (largely because of the market cattle testing program), while the percent infected lots remained approximately the same as a year ago. The number of animals tested dropped more than 1,500,000, and the number of reactors decreased approximately 5,000 (to 131,806). In regard to the percent reactor cattle, a change first apparent in 1961 has become significant. As the brucellosis eradication program shifts from an areawide testing program to one of frequent surveillance of herds at concentration points, blood testing activities are being funnelled more and more into those herds most likely to contain infected animals. Thus, the percent reactors can be expected to rise temporarily as increased efficiency is achieved. (In 1961 the percent reactors was 1.04; in 1962, 1.14.)

The number of reactors found in 1963 will be greater than in 1962. Also, the percent reactors will continue to rise for a number of years, then recede to zero. Progress will not be clearly reflected in the cold data during the coming few years, for many factors must be considered--the number of areas participating in the complete eradication program; the incidence of infection in newly participating areas; the number of reactors found from year to year; the number of market animals revealing titers to the blood test; the percent milk ring test suspicious dairy herds; the number of herds under quarantine; and others. Each program official should become thoroughly familiar with all criteria for measuring progress so that accomplishments will be effectively communicated to the livestock industry and the general public at every opportunity.

Milk Ring Testing Program

The percent suspicious milk ring tests continued to drop precipitously during 1962. It was down one-third from the previous year (1.9 percent in 1961; 1.3 in 1962). The practice of including all milk ring test suspicious herds in "problem herd" programs as eradication is approached is paying dividends. Although most infected animals in milk ring test suspicious herds will be identified by the blood test, others may be more readily identified through supplemental procedures such as bacteriology. The milk ring test is proving more and more specific as all factors become known. However, the standard blood agglutination test continues to be the most useful and accurate of the diagnostic tests and procedures available.

Identification of Vaccinated Calves

More than 80 percent of the calves vaccinated officially in the United States during the coming year will be identified with the U.S. Registered "Shield and V" tattoo die. Only Georgia, Kansas, Maine, New Hampshire, Ohio, Pennsylvania, Virginia and Wisconsin have yet to adopt the standard universally recognized identification procedure. As eradication is approached, it becomes increasingly important that animals which have received inoculations of Strain 19 Brucella Vaccine must be readily recognized, wherever they may be found. It is also important that only authorized persons should be permitted to administer the vaccine and apply the official identification mark. This is to assure that potent vaccine will be administered at proper ages. To minimize persistent postvaccinal titers, vaccinations should be limited to the lower age limits.

There seems to be some misunderstanding concerning the protection afforded under the U.S. Registered Trade Mark laws. To date, there have been no charges brought against anyone for applying the mark to cattle without specific authorization. However, this can be done if unauthorized persons tattoo cattle with the protected mark. It is urged that the states listed above review the advantages of the official tattoo recommended in the Uniform Methods and Rules and consider its adoption at the earliest possible date.

Closing the Gap

An urgent appeal was delivered in my message a year ago to "close the gap" between the advanced and lagging areas. I am happy to report that there are many signs that this appeal was taken seriously. Livestock owners in noncertified areas are becoming increasingly aware of the consequences of living with brucellosis. They are becoming concerned for their markets in states which are approaching eradication. They are seeking means of enlisting support for the eradication effort. They are searching for additional information on the entire subject. Livestock industry leaders are taking a firm stand in support of the program, knowing that the Nation cannot turn away from the goal of eradication when the benefits are so obvious and the need so great.

In the not too distant future, the job will be done, and all concerned will reminisce about the brucellosis problems of the '60s, just as the Nation's swine owners remember vesicular exanthema eradication in the '50s. Many diseases of animals have been eradicated from the United States. Many more will be eradicated in the future. Brucellosis will be one of them.

A Look at 1963

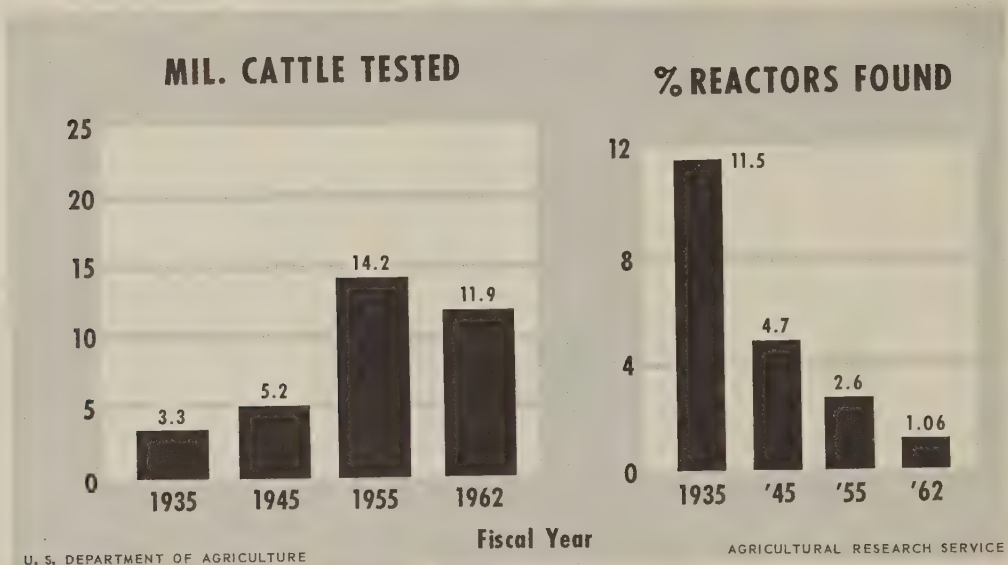
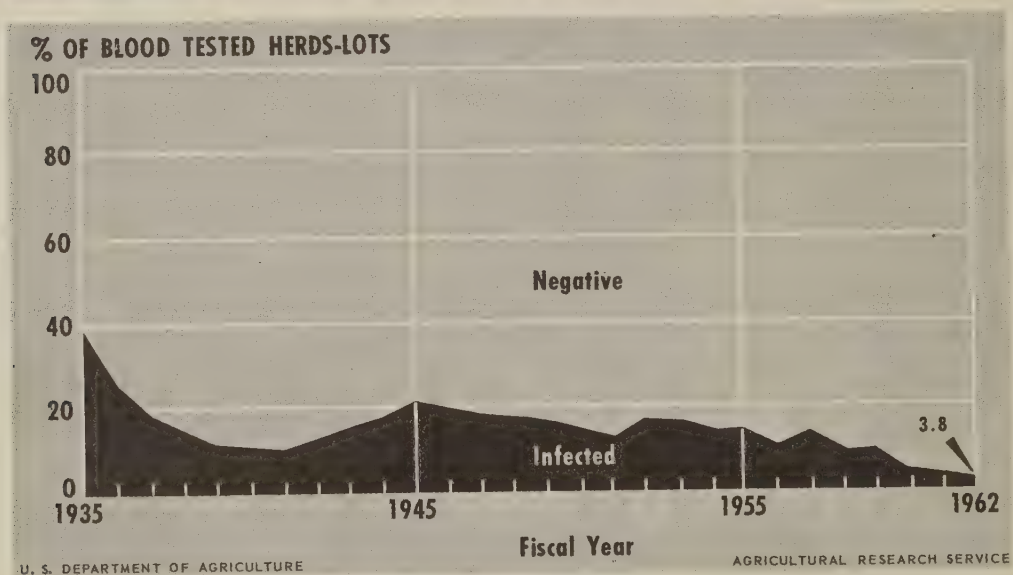
By the end of 1963, all but 15 percent of the counties in the Nation will have achieved Modified Certified Brucellosis Area status. Many of the remaining will be engaged in preparatory programs designed to wipe out brucellosis in the majority of known infected herds before seeking certification. More calves will be vaccinated. The market cattle testing program will become increasingly effective. The number of infected herds in the Nation will be reduced by many thousands. Human brucellosis cases will continue to decrease as exposure opportunity becomes less frequent. Several new states will have achieved Modified Certified Brucellosis Area status. Probably a hundred new Certified Brucellosis-Free Areas will be established. But let us not become overconfident; much remains to be done. There are many problems to face, but at no time in the past have we been able to move forward with greater confidence toward nationwide certification. Let's strive for '65!

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COOPERATIVE BRUCELLOSIS ERADICATION PROGRAM DATA

Activities	Calendar Year		Percent Change for 1962
	1961	1962	
Blood Tests			
Herds-Lots.....	1,555,013	1,701,542	+9.4
Reactor Herds-Lots.....	60,865	65,395	+7.4
Percent.....	3.9	3.8	(-0.1)
Cattle Tested.....	13,207,861	11,577,255	-12.3
Reactor Cattle.....	136,816	131,806	-3.7
Percent.....	1.04	1.14	(+0.1)
Ring Test			
Herd Tests.....	1,753,394	1,694,569	-3.4
Suspicious Herd Tests.....	33,866	22,651	-33.1
Percent.....	1.9	1.3	(-0.6)
Vaccinations (Calfhood).....	6,751,362	6,966,296	+3.2
Certification of Counties			
Modified Certified			
New and Reinstated	252	226	
Removed.....	13	48	
Total.....	2,214	2,343	
Certified Brucellosis-Free			
New.....	57	50	
Total.....	100	150	
Total Certified Counties.....	2,314	2,493	+7.7

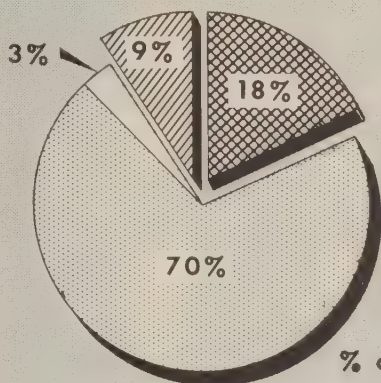
() % difference

BLOOD TESTING: CATTLE**BLOOD TESTING: HERDS-LOTS**

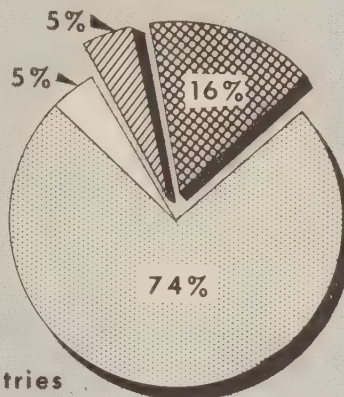
COUNTY CERTIFICATION STATUS

Cooperative State-Federal Brucellosis Eradication Program

Dec. 31, 1961



Dec. 31, 1962

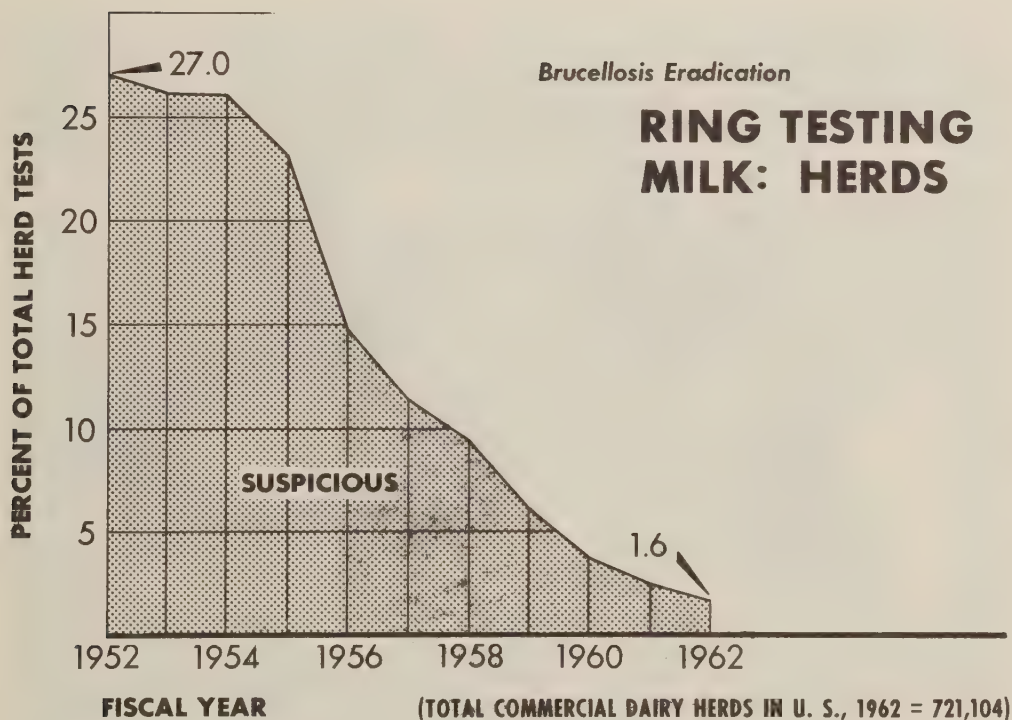


% of Total Countries

Modified Certified
 Certified Free
 Area Work in Progress
 Individual Herd Participation

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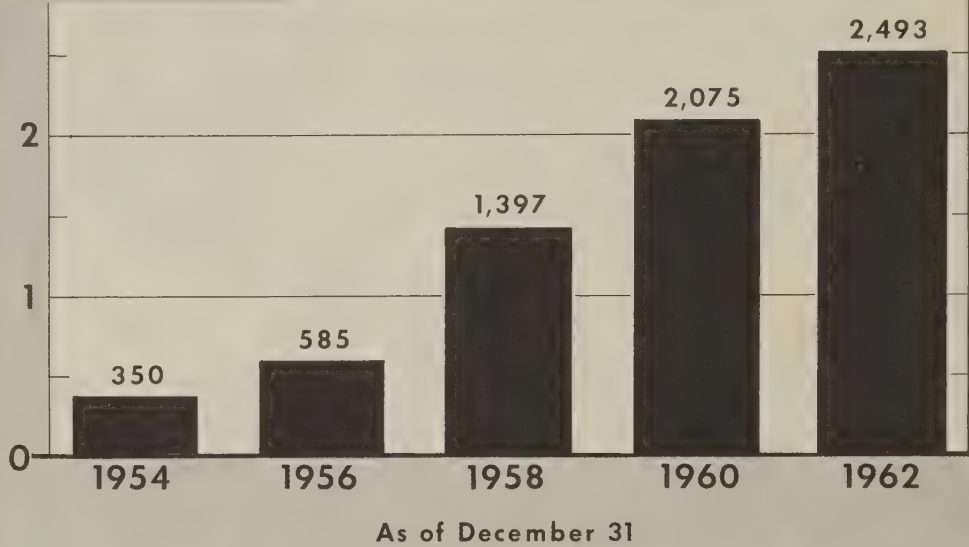
U. S. DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

CERTIFIED COUNTIES

Cooperative State-Federal Brucellosis Eradication Program

THOUS. COUNTIES

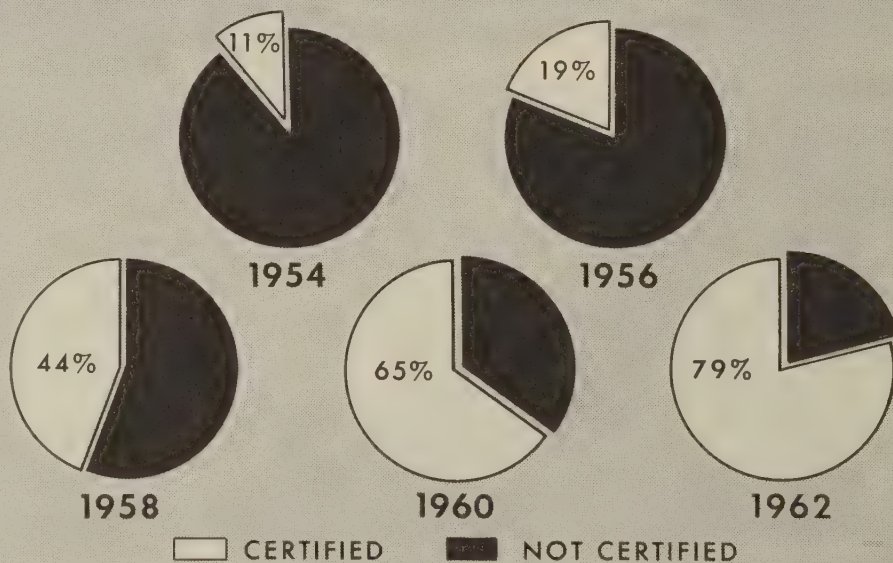


U. S. DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

COUNTY CERTIFICATION STATUS

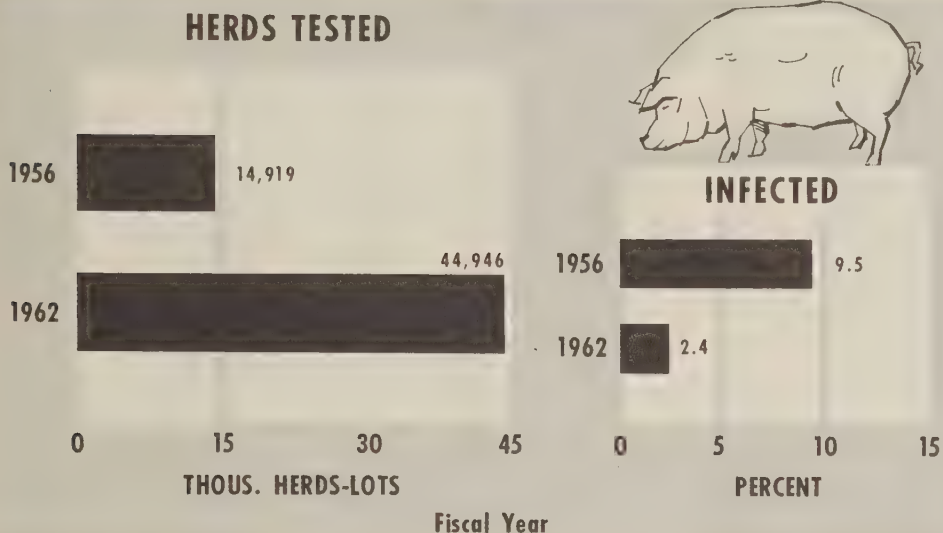
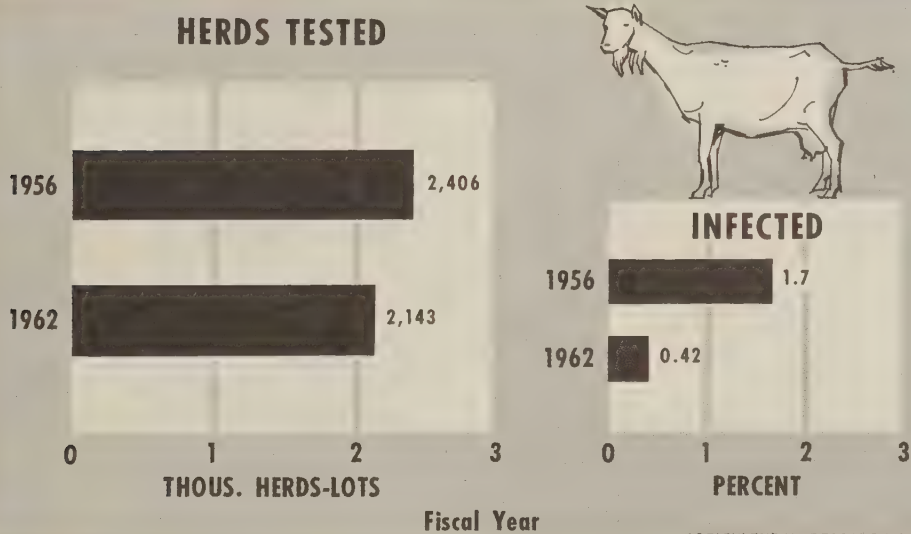
Cooperative State-Federal Brucellosis Eradication Program



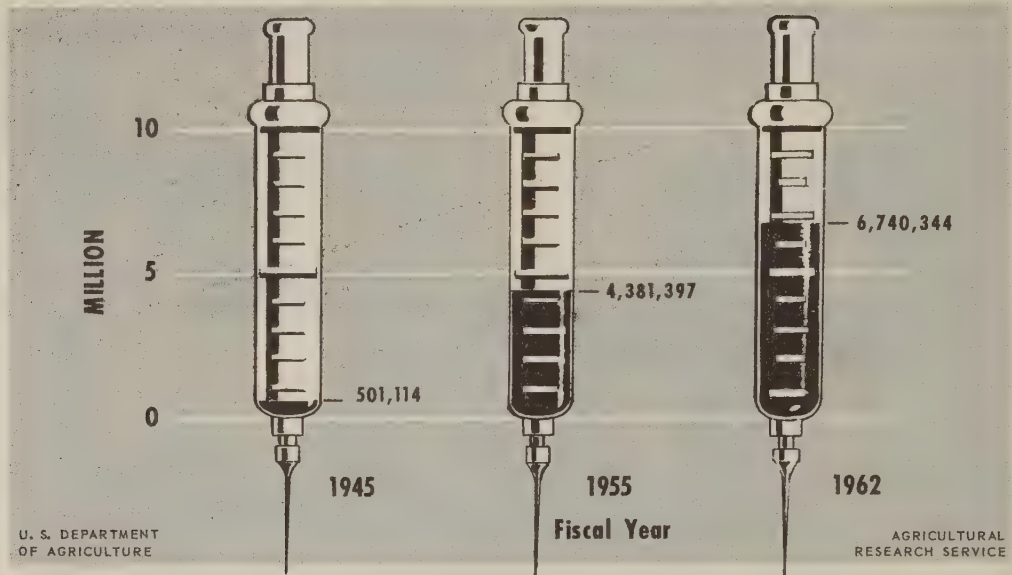
DATA AS OF DECEMBER 31, YEARLY

U. S. DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

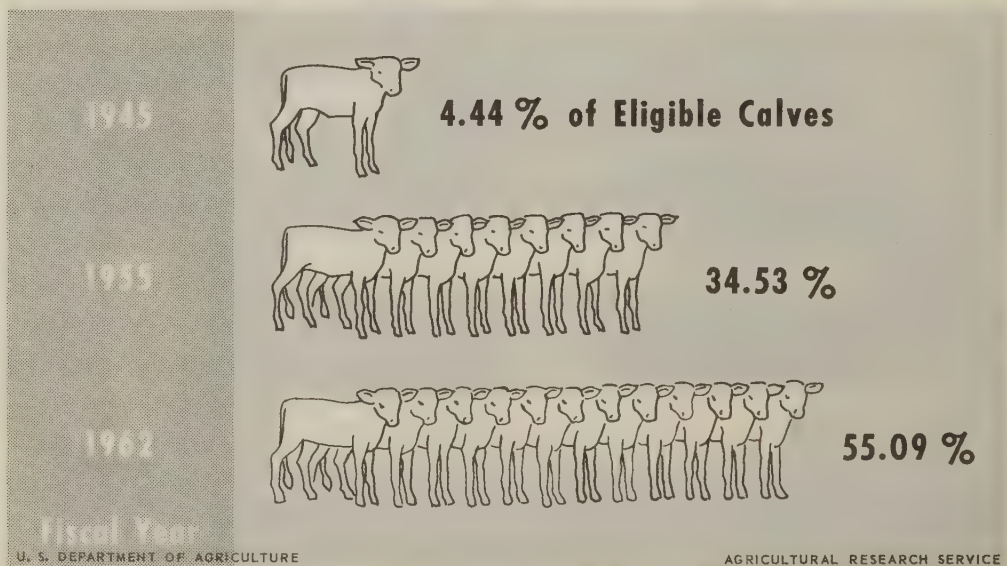
BLOOD TESTING: SWINE**BLOOD TESTING: GOATS**

CALVES VACCINATED



BRUCELLOSIS ERADICATION

OFFICIAL CALF VACCINATIONS

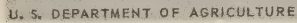


SWINE POPULATION AND HUMAN BRUCELLOSIS



AGRICULTURAL RESEARCH SERVICE

BRUCELLOSIS-UNDULANT FEVER



AGRICULTURAL RESEARCH SERVICE

STATEMENTS PRESENTED TO THE NATIONAL BRUCELLOSIS COMMITTEE

The following statements were presented to the National Brucellosis Committee during the annual meeting held at St. Louis, Missouri, February 20-21, 1963.

Mr. Bob Parsons, Weston, Colorado: "Many stockmen are concerned about the status of the brucellosis program and its direction in the range areas. Cattlemen have always supported efforts which would add to the safety and desirability of our product to our customers, the consuming public, and will continue to do so in the future.

"Some of our main points of concern relative to the brucellosis program are as follows:

We believe that in order to give additional impetus to this program that full recognition be given to the interstate movement of officially vaccinated beef type females by the respective states and the appropriate agencies of the U.S.D.A.

We feel that continued blood testing to maintain modified certified status does not have widespread appeal among cattlemen in the range and semi-range areas and that official vaccinations should be an alternate means for recertification. We feel that the present procedures for maintaining modified certified status is increasingly unacceptable and does not represent the true health status of the area concerned.

Many feel that if these and perhaps other modifications are not made, the present program may well break down in the range and semi-range states.

"Serious consideration of these points would certainly be appreciated. We would hope that appropriate individuals and agencies would investigate these items carefully and take affirmative action upon them."

Mr. Bruce Orcutt, Miles City, Montana, presented a plan involving the following major points:

1. The testing of 100% of all beef cows.
2. Adult vaccination of all negative herds and cows.
3. No additional testing thereafter in these herds.
4. 100% vaccination continued.
5. The movement of all vaccinates in interstate shipment.

Mr. Bob Laramore, Gillette, Wyoming, requested the following resolution adopted by the Brucellosis Study Committee of the American National Cattlemen's Association be included in the proceedings:

CALFHOOD VACCINATION: WHEREAS, Calfhood vaccination for brucellosis has been a major factor in the control and eradication of this disease; and

WHEREAS, Calfhood vaccination in range and semi-range beef herds will eradicate and prevent re-infection and is much more effective than testing a percentage of the herd, or all the herd possibly every ten or fifteen years for recertification; therefore be it

RESOLVED, That we urge the United States Livestock Sanitary Association and the Animal Research Service of the U.S.D.A. to adopt official calfhood vaccination as an alternate method of recertification for modified certified areas for beef herds in the range and semi-range areas; and be it further

RESOLVED, that official brucellosis vaccinated bovine beef-type females be accepted for intra or interstate movement in range and semi-range areas.

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NOMINATING COMMITTEE REPORT
OF THE
NATIONAL BRUCELLOSIS COMMITTEE

Committee members: Herman Aaberg, Chairman, Bob Laramore and Dr. I. H. Borts presented the following slate of officers:

Officers

Chairman, S. H. McNutt
Vice Chairman, C. G. Scruggs
Secretary, R. H. Dastrup
Assistant Secretary, R. E. Burleson

Directors to expire in 1966

Charles G. Scruggs
Dr. James H. Steele
Herman Aaberg
Dr. Raymond L. White
Dr. James R. Hay
Dr. N. B. McCullough
J. W. Ralph Bishop
Dr. C. K. Mingle

Executive Committee

W. D. Knox
C. A. Manthei
C. K. Mingle
Bob Laramore
R. E. Burleson
J. W. Ralph Bishop
Dudley Campbell
Herman Aaberg
James H. Steele

RECOMMENDATIONS OF THE NATIONAL BRUCELLOSIS COMMITTEE

by
S. H. McNutt, Chairman*

The following resolutions were passed by the National Brucellosis Committee:

We believe the market testing program has been a very valuable tool in the brucellosis program and recommend the widest possible use of it. We further recommend that educational efforts be stepped up to effect the wide use of back tags. In addition, we recommend that special effort be made to insure the reporting of results to owners of back tagged cattle. We believe the market cattle testing program should be continued as an alternate method for initial certification and for recertification.

Where practical, we recommend that calves be vaccinated as near four months of age as possible, because evidence indicates minimum official age vaccination confers a resistance to brucellosis equal to that of maximum age vaccination.

We recommend that, where practical and advisable, extra efforts be made to encourage the vaccination of a higher percentage of heifer calves.

We recommend that the present level of Federal appropriations be continued in order to reach the declared goals of National eradication.

We vigorously reaffirm the goal of a modified certified United States by 1965 and a brucellosis-free United States by 1975 and that all possible efforts be made to give wide publicity to these goals.

Whereas the United States has been free of sheep brucellosis, this disease has not effected the public health or animal health, and the people associated with the sheep industry have been able to carry on their production without the hazards of this dangerous disease. Sheep brucellosis is an important animal health problem in the U.S.S.R. and other eastern European countries. In these countries, it also constitutes a public health problem.

In view of the potential hazard associated with the use of viable Strain 19 Brucella vaccine in sheep and establishing it as a new problem in the U.S.A., the National Brucellosis Committee urges that live Strain 19 Brucella vaccine not be used in sheep. The National Brucellosis Committee further recommends that the U.S.D.A. inaugurate research immediately to determine the hazards of using live Strain 19 Brucella vaccine in sheep and the Public Health Service determine what the hazards may be to the health of the public and those handling sheep and their products.

*Dr. McNutt is Professor of Veterinary Science, University of Wisconsin College of Agriculture, Madison, Wisconsin.

(The minutes of the National Brucellosis Committee meeting are published in the "1963 Proceedings of the Annual Meeting of Livestock Conservation, Inc." Write to Livestock Conservation, Inc., 405 Exchange Building, Chicago 9, Illinois. The proceedings of the 1963 annual meeting are reported on pages 13 and 14.)

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